DOCUMENT RESUME

ED 361 181	SE 053 582

TITLE	Building a Shared Vision for Environmental Education. Proceedings of a Conference Sponsored by the Federal Task Force on Environmental Education (Washington, D.C., November 19-21, 1991).
INSTITUTION	Eastern Research Group, Inc., Lexington, MA.
SPONS AGENCY	Environmental Protection Agency, Washington, D.C. Office of Public Affairs.
REPORT NO	EPA171-R92-021
PUB DATE	Apr 92
CONTRACT	EPA-68-D9-0133
NOTE	292p.
PUB TYPE	Collected Works - Conference Proceedings (021)
EDRS PRICE	MF01/PC12 Plus Postage.
DESCRIPTORS	Adult Education; Adult Programs; *Educational Objectives; Elementary Secondary Education; *Environmental Education; Federal Legislation; Federal Programs; Government Role; Higher Education; *Long Range Planning
IDENTIFIERS	*Environmental Literacy; Environmental Protection Agency

ABSTRACT

The U.S. Environmental Protection Agency (EPA), in cooperation with 15 other agencies making up the Federal Task Force on Environmental Education, sponsored a national conference to foster and support the goal of environmental literacy for young people and adults in schools and communities. This conference report contains an executive summary of the conference, copies of the speeches delivered at the conference, reports from the conference panel sessions, working group summaries, 2 special presentations, and 11 appendices. Speeches by national and international leaders covered environmental education (EE) priorities at EPA, EE and America 2000, EE at the U.S. Department of the Interior, EE in the Peace Corps, a vision for EE, goals and priorities in implementing the National EE Act, the National EE and Training Foundation, the United Nations conference on the environment and development, the future of EE, and an overview of EE activities in Mexico. Two panels discussed successful partnerships to develop and deliver EE in the United States and globally, and a third panel discussed successful partnerships to finance EE. Working groups discussed the current status, future directions, and recommendations for EPA and the federal government for EE in grades K-12; colleges and universities; museums, nature centers, and parks; community-based youth programs; adult continuing education programs; nonprofit organizations; business community, workplace, and marketplace; minority and multiethnic communities; government; teachers; entertainment and media; and environmental health risk education. Appendices include the conference agenda; lists of conference speakers, panelists, facilitators, attendees, and exhibitors; a list of members of the Federal Task Force on EE; speaker, panel members, and National EE advisory council members biographies; a list of EPA Regional EE coordinators; a summary of U.S. EPA Office of EE activities; a copy of the National EE Act; and a list of national education goals. (MDH)

United States
Environmental Protection
Agency

Office of Communications,
Education, and Public Affairs
Washington, DC 20460

EPA171-R92-021
April 1992

EPA

ED 361 181

Building a Shared Vision for Environmental Education

A Conference Sponsored by the Federal Task Force on Environmental Education

SE 053 582

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BUILDING A SHARED VISION FOR ENVIRONMENTAL EDUCATION

PROCEEDINGS

A conference sponsored by the
Federal Task Force on Environmental Education
November 19-21, 1991
Washington, DC

U.S. Environmental Protection Agency
April 1992

Prepared by Eastern Research Group, Inc.
under Government Contract No. 68-D9-0133

ACKNOWLEDGMENTS

The conference, "Building a Shared Vision for Environmental Education," was held in Washington, D.C., on November 19-21, 1991. It was sponsored by the Office of Environmental Education, U.S. Environmental Protection Agency (EPA), and the other members of the Federal Task Force on Environmental Education:

- Agency for International Development
- Council on Environmental Quality
- Department of Agriculture
- Department of Commerce/National Oceanic and Atmospheric Administration
- Department of Defense
- Department of Education
- Department of Energy
- Department of Health and Human Services
- Department of the Interior
- Department of State
- National Aeronautics and Space Administration
- National Science Foundation
- Peace Corps
- Tennessee Valley Authority
- United States Information Agency

EPA would like to thank our federal agency co-sponsors as well as EPA's regional offices and research laboratories for their time, energy, and commitment in helping us design and implement this conference. We also would like to thank the following speakers, panelists and moderators, and workgroup facilitators for their ideas, presentations, and skill in guiding the presentations and discussions.

Speakers

Alejandro Diaz Camacho, Director General of Environmental Education, Ministry of Urban Development and Ecology, Mexico
Lewis Crampton, Assistant Administrator for Communications, Education, and Public Affairs, U.S. EPA
F. Henry Habicht, II, Deputy Administrator, U.S. EPA
John Heinritz, Vice President of International Marketing Operations, Warner Brothers, Inc.
Kathleen Helppie, Vice President of Production and Administration, Warner Brothers Classic Animation
Robert Herbst, Chair, Interim Board of Trustees, The National Environmental Education and Training Foundation
Louis Iozzi, Dean of Academic and Student Affairs, Cook College, Rutgers University
David Kearns, Deputy Secretary, U.S. Department of Education
Bill Kurtis, President, Kurtis Productions, Inc.
Manuel Lujan, Jr., Secretary, U.S. Department of the Interior

James Moseley, Assistant Secretary for Natural Resources and Environment, U.S. Department of Agriculture
Gaylord Nelson, Counselor, The Wilderness Society
William Reilly, Administrator, U.S. EPA
Richard Stephens, Associate Director, Office of University and Science Education, U.S. Department of Energy
Andrew Wolf, Special Assistant to the Director, United Nations Environment Programme, United Nations
Frank Young, Deputy Assistant Secretary for Health, Science, and the Environment, U.S. Department of Health and Human Services
Barbara Zartman, Deputy Director, U.S. Peace Corps

Panelists and Moderators

Thomas Benjamin, Staff Director, Alliance for Environmental Education
Annette Berkovits, Director of Education, Bronx Zoo
Walter Bogan, Director, Science Resources for Schools, American Association for the Advancement of Science (Moderator)
Patricia Borkey, Teacher, Mathematics and Science Center, Richmond, Virginia
Lynn Elen Burton, Director of Environmental Education, Environment Canada (Moderator)
Randall Champeau, Director, Wisconsin Center for Environmental Education, University of Wisconsin, Stevens Point
Anthony Cortese, Dean of Environmental Programs, Tufts University
William Eblen, President, Rene Dubos Center for Human Environments
Lillian Kawasaki, General Manager, Department of Environmental Affairs, City of Los Angeles
Nan Little, Director, YMCA Earth Corps
Kathy McGlauflin, Vice President of Education and Director of Project Learning Tree, American Forest Foundation (Moderator)
Augusto Medina, Senior Program Officer, Latin American and Caribbean Programs, World Wildlife Fund
Carol Muscara, Director, Audubon Science Institutes, National Audubon Society
Madeline Strong, Executive Director, Florida Advisory Council on Environmental Education
Herbert Thier, Director, Chemical Education for Public Understanding Program, University of California, Berkeley
Valerie Williams, Educational Services Supervisor, Southern California Edison

Workgroup Facilitators

Judy Braus, Environmental Education Specialist, U.S. Peace Corps
Robert Dixon, Global Mitigation and Adaptation Team Leader, Environmental Research Laboratory, U.S. EPA
Fenna Gatty, Teacher, Searles Elementary School, New Haven Unified School District, Union City, California (Presenter)
Clarice Gaylord, Office of Administration and Resource Management, U.S. EPA
Lynn Hodges, Manager, Environmental Education Section, Tennessee Valley Authority
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Terry Ippolito, Environmental Education Coordinator, Office of External Programs, U.S. EPA, Region 2

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Margaret McCue, Director, Office of Public Affairs, U.S. EPA, Region 5
John McLachlan, Director, Division of Intramural Research, National Institute of Environmental Health Sciences, U.S. Department of Health and Human Services
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Helen Taylor, Senior Associate, ICF Kaiser Engineers, Inc.

This document is based entirely on material presented at the conference. The material was compiled from handouts and presentations provided by speakers, panelists, and facilitators and from notes and tape recordings made at the conference. Overall management of the conference and proceedings development was provided by Kathleen MacKinnon, Office of Environmental Education, U.S. EPA. Review and approval of this document was provided by Lewis Crampton, Office of Communications, Education, and Public Affairs, U.S. EPA, as well as by Bradley Smith and Kathleen MacKinnon, Office of Environmental Education, U.S. EPA.

The U.S. Environmental Protection Agency has reviewed and approved this document for publication. Mention of trade names, commercial products, or specific programs does not constitute endorsement or recommendation for use.

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SECTION ONE

EXECUTIVE SUMMARY

BUILDING A SHARED VISION FOR ENVIRONMENTAL EDUCATION

EXECUTIVE SUMMARY

I. INTRODUCTION

On November 16, 1990, President Bush signed into law the National Environmental Education Act to foster environmental literacy for young people and adults in schools and communities. The Act builds upon existing environmental education efforts by encouraging partnerships among academia, business, and industry, as well as governmental and nongovernmental agencies and organizations.

A year later, on November 19-21, 1991, the U.S. Environmental Protection Agency (EPA), in cooperation with the 15 other agencies that make up the Federal Task Force on Environmental Education, sponsored a national conference to foster and support the goals of the Act. "Building a Shared Vision for Environmental Education" brought together more than 330 environmental educators and advocates from schools and universities; federal, state, and local organizations; businesses; nonprofit organizations; and international agencies. The purpose of the conference was to:

- Expand communication networks
- Foster partnerships
- Generate ideas for the future of environmental education
- Initiate a dialogue on ways the federal government can best support the nation's environmental education efforts

The conference featured presentations by national and international leaders in government and the environmental movement, panel discussions on successful partnerships at home and abroad, and intensive workgroup sessions on the future of environmental education. The presentations and discussions covered all sectors of society from schools and universities to the media and business. Each day of the conference tackled a different theme. Day One set the stage with presentations on the importance of integrating environmental education into educational reform. Day Two provided historical background and reports on the current state of environmental education. Day Three probed the future by soliciting the ideas of conference participants. In addition, the conference featured an exhibit hall open to the public with over 40 exhibitors from government and nongovernmental organizations, a reception, luncheon presentation, and banquet.

II. CONFERENCE SUMMARY

A. SPEECHES

Welcome by Lewis Crampton

Lewis Crampton, Associate Administrator for Communications, Education, and Public Affairs, U.S. EPA, opened the conference on Tuesday evening, November 19, by welcoming all participants, thanking conference organizers, and setting forth the goals for the 3-day event. He introduced the conference as "a long-awaited curtain raiser on the National Environmental Education Act" and defined its major purpose as a forum to "expand our network of communication and to build upon existing partnerships." He emphasized that the federal government's role was primarily to "listen to your ideas and suggestions on where environmental education should be headed in the future, to learn from your experiences, and to listen to your advice on how the federal government can best support the nation's environmental education efforts."

Mr. Crampton also provided a brief overview of the conference. Day One, entitled "Adding the 2 E's to the 3 R's," would emphasize the importance of integrating environmental education into the fundamentals of education by building upon, implementing, and sustaining partnerships within and among federal agencies, government, business, nonprofit organizations, schools, and communities.

Day Two, "How We Got Here," would evaluate the current state of environmental education and examine how environmental education has evolved over the past 20 years since the first Earth Day. The focus of this day's activities would be on presentations by three panels representing a broad range of organizations involved in environmental education. Panelists would discuss current programs, their experiences in establishing partnerships, and ways the federal government could support their efforts.

Day Three, "Where Do We Go from Here?," would focus on the future of environmental education, with the primary emphasis on workgroup sessions devoted to soliciting ideas from participants on future needs in environmental education in schools, universities, nature centers and parks, communities, nonprofit organizations, business, government, and the media.

Keynote Address—Building a Shared Vision for Environmental Education by F. Henry Habicht, II

EPA Deputy Administrator, F. Henry Habicht, II, spoke about EPA's mission in environmental education and the excitement the Agency felt in working with young people and people from diverse communities. He emphasized the importance of supporting the America 2000 education goals and adding an environmental component to these goals. He described EPA's goals and responsibilities as, building "an ethic of pollution prevention" and working toward "integrating the environment into the fabric of society and of life itself so that people think about the environment before they make decisions rather than making decisions then thinking about the environmental consequences."

Deputy Administrator Habicht emphasized the priority EPA places on building partnerships in both the public and private sectors. He discussed several of EPA's existing agreements involving federal agencies including a multi-agency T.R.A.I.L. BOSS program as well as separate agreements to collaborate with the Peace Corps and the Department of Energy.

Deputy Administrator Habicht also described partnerships with schools and universities across the country; with youth groups such as the Boy Scouts and Girl Scouts; and with the private sector including the TIME-Warner Environmental Education Campaign and the Bill Kurtis Productions partnership with the U.S. Department of Energy, WTTW TV in Chicago, Amoco Corporation, and Waste Management, Inc. He also emphasized the importance of international partnerships such as efforts to develop a trilateral environmental education initiative among the United States, Canada, and Mexico. He concluded by emphasizing that EPA's goal is to develop a message of hope about the future and to prepare the nation to make environmentally sound choices.

Environmental Education Priorities at EPA by William Reilly (Videotape)

U.S. EPA Administrator William Reilly spoke about EPA's commitment to the America 2000 education strategy, which he saw as initiating "major changes in our attitudes about learning in all of America's 110,000 public and private schools—changes in every home and in every community." He emphasized that for the first time in EPA's history, our mandate includes education in addition to enforcement and regulation. He defined broad educational goals for the Agency, which emphasized environmental literacy, international cooperation and environmental stewardship, and the encouragement of young people to pursue careers essential to the future of environmental improvement. He stated that "all these steps are important because, in the end, environmental education is about promoting stewardship and developing a lasting ethic that recognizes the importance of the environment to the future of the entire planet."

Administrator Reilly stated that EPA's environmental education efforts would be built around cooperation. EPA would pursue public/private partnerships outside the government; serve as a clearinghouse for environmental education materials; provide seed money to state and local governments and private groups; and reach out to inner city youth, Native Americans, and other traditionally underrepresented groups. Mr. Reilly also spoke about the National Environmental Education and Training Foundation, which would encourage private support for environmental education activities.

Administrator Reilly lauded the progress that had been made in air and water quality in the last 20 years, but emphasized the role of environmental education in helping address the challenges of the future, such as nonpoint source pollution, global climate change, and ozone depletion.

Environmental Education and America 2000 by David Kearns

David Kearns, Deputy Secretary, U.S. Department of Education, spoke about the Department of Education's America 2000 strategy for educational reform. He expressed concern that although we've been very good at educating the top half in this country, we've never done very well at educating everyone. Unless we educate everyone to the same high level, he emphasized, we won't be able to compete with the rest of the world. Deputy Secretary Kearns discussed both how far environmental education has come in this country and how far it has to go. Comparing the United States to Japan, he focused on "expectation levels," claiming that Japanese business leaders have substantially higher expectations for success than we do in the United States. He emphasized that the America 2000 reform and restructuring combats this trend by setting national education goals at the highest level.

The America 2000 strategy for reform, Mr. Kearns explained, needs to take place at the grassroots level, with real ownership for education at the local and community levels. Teaching about the environment through hands on, real world-oriented activities in all disciplines offers a tremendous opportunity for motivating students and teachers alike. Mr. Kearns also discussed the four tracks of America 2000: Track 1—better and more accountable schools; Track 2—new schools; Track 3—a more literate public; and Track 4—improving the learning environment outside of school, on the premise that students, between the ages of 5 and 18, spend 91 percent of their time outside the classroom.

Mr. Kearns reported that 30 states already had signed on as America 2000 states, and a number of communities had decided to adopt America 2000 goals. He challenged those in the university community to play a leadership role in the reform and restructuring of the country's educational system. He concluded by stating that we should have the highest expectation levels for success in education and the environment so that "our children will live a better life than their parents."

Environmental Education at the U.S. Department of the Interior by Manuel Lujan, Jr.

Manuel Lujan, Jr., Secretary, U.S. Department of the Interior, provided an overview of Interior's programs in environmental education. He emphasized that, as steward of about 440 million acres of public lands, Interior must balance development and preservation. He stated that the agency had made great progress in promoting public awareness of the environment and incorporating environmental concerns into its land management programs. Secretary Lujan also spoke about the partnerships necessary to effectively implement these programs. Some of Interior's programs described by Mr. Lujan included:

- "Suitcase for Survival," an educational program on endangered species that is a cooperative effort of the U.S. Fish and Wildlife Service, the National Fish and Wildlife Foundation, the World Wildlife Fund, the American Association of Zoological Parks and Aquariums, and the Interior's Take Pride in America.

- The Water Resources Education Initiative to evaluate water education materials—a 3-year partnership between the American Water Resources Association, three Interior Bureaus, and the Denver-area public schools.

- The Enjoy Outdoors America Initiative, which focuses on educating the public about the outdoor environment, and involves partnerships with local, state, and national constituency groups and governments.

- The Bureau of Land Management's (BLM's) new heritage program in support of the America 2000 goals, which includes opportunities for studying America's cultural heritage through the BLM's historic and archeological properties.

- The Bureau of Reclamation's Project WET—Water Education for Teachers—which has been implemented in North Dakota, Montana, and Idaho.

- The National Park Service environmental education programs, including the Leave No Trace and the National Parks as Classrooms programs.

Secretary Lujan said Interior was looking forward to developing more environmental education programs and was eager to develop partnerships, share ideas, and collaborate on joint projects.

Peace Corps—A Leader in Environmental Education by Barbara Zartman

Barbara Zartman, Deputy Director of the Peace Corps, began her talk by stating that the conference served as a symbol of a renewed national commitment to environmental education and was an important opportunity to establish links to more effectively solve environmental problems through education. She emphasized that "environmental education can help people gain the knowledge, skills, motivation, and commitment to manage and sustain the earth's resources, and to take responsibility for maintaining environmental quality."

Ms. Zartman described some of the environmental challenges we are facing globally and provided a brief history of the Peace Corps and its mission. Peace Corps currently has volunteers serving in nearly 90 countries and environmental programs in more than 60, with more than 700 volunteers. The environment is becoming an increasing focus of the Peace Corps; in fiscal year 1991, host countries asked the Peace Corps to provide 550 pure environmentalists. Currently, volunteers are incorporating environmental issues into all subject areas, developing primary and secondary school curricula in environmental education, and training teachers in environmental education techniques. Projects range from developing an environmental education component for a national curriculum in St. Kitts to conducting teacher training workshops in Gabon, Sri Lanka, Botswana, and Central Europe.

Ms. Zartman stressed the critical role of the Peace Corps' collaborations with leading world environmental organizations. She stated that as the Peace Corps looks to the future, the organization would be relying on collaborative agreements, such as a current project to provide preservice training in environmental education to volunteers in Hungary, Czechoslovakia, and Poland, which involves assistance from the Regional Environmental Center in Budapest, Hungary; EPA; the Institute for Conservation Leadership; the World Wildlife Fund; and local experts. The Peace Corps also would implement a Peace Corps World Wise Schools Program to provide an information exchange between U.S. classrooms involving 2,500 teachers and volunteers abroad.

A Vision for Environmental Education by Gaylord Nelson

Gaylord Nelson, Counselor of The Wilderness Society and former Senator from Wisconsin, in an inspiring address, challenged participants to approach the environmental issue from a political and economic perspective. In his view, the steady consumption of our natural resource base by commercial and industrial development poses a serious threat to our survival. Senator Nelson set forth a plan of action for the next 30 to 40 years involving the establishment of a "unified political coalition" that would support the development of an environmentally sustainable economy, strong

Presidential leadership supported by Congress in implementing environmentally sound policies, and the creation of a "conservation generation" through extensive environmental education. He spoke passionately about the need for a generation of people "imbued in its heart and mind with a strong conservation ethic that serves to guide its conduct respecting all matters relating to nature and its works." Senator Nelson felt that the lack of this guiding ethic was the single greatest obstacle to solving the globe's environmental problems.

Senator Nelson suggested nurturing this conservation generation through a comprehensive nationwide environmental education program in every school throughout the country. He encouraged state mandates for environmental education, such as the Wisconsin mandate that requires infusion of environmental education into K-12 curricula and teacher environmental literacy.

Senator Nelson described world population growth as the most serious environmental threat, stating that an ever expanding population will eventually outstrip the earth's ability to support it. He also cited such issues as global warming, pollution of the oceans, declining biodiversity, groundwater pollution, and hazardous wastes as high-ranking issues deserving attention. He concluded with a brief overview of Earth Day, its history and objectives. He stated that his goal in creating Earth Day was both political and educational: to force the issue of environmental protection into the political arena and to institutionalize an annual Earth Day as an educational event. Senator Nelson recognized the progress that has been made in the past 20 years on all fronts—political, cultural, and economic—and expressed hope that "we will soon recognize that environmental education goes directly to the heart of the challenge to create a sustainable economy."

Goals and Priorities in Implementing the National Environmental Education Act
by Lewis Crampton

Mr. Crampton, U.S. EPA, Associate Administrator, outlined the goals and priorities of the U.S. EPA Office of Environmental Education (OEE) in implementing the National Environmental Education Act (NEEA). He described OEE's objectives to create partnerships and develop positive working relationships with other agencies, businesses, and schools to carry out these mandates. Mr. Crampton also discussed the main elements of OEE's environmental education program, including:

- An environmental education clearinghouse of materials and programs.
- Internship and fellowship programs to place college students and teachers in federal environmental and natural resource management agencies.
- Youth programs that reach out to the Boy and Girl Scouts and other organizations.
- Advisory boards that link EPA offices, federal agencies, and other sectors such as educational institutions, nonprofit organizations, and businesses.
- Grants programs to support a national training center and environmental education projects.
- A teacher-oriented periodical called *EPA Earth Notes* for K-6.
- International linkages through the State Department and U.S. Information Agency.

The National Environmental Education and Training Foundation by Robert Herbst

Robert Herbst, Chair of the Interim Board of Trustees, The National Environmental Education and Training Foundation, opened his presentation with an invocation to participants to "share your knowledge with others, and to be environmental leaders by your words, deeds, and actions." Like Gaylord Nelson, Mr. Herbst introduced the concept of a conservation ethic and argued that such an ethic is, at long last, gaining prevalence in America. He stated that our vast land and resource base defined us as a nation more than our industrial, military, or technological strength.

Mr. Herbst stated that the key to our ability to preserve and maintain the earth is through a global environmental ethic fostered by environmental education. To further this effort, The National Environmental Education and Training Foundation was established as a public/private partnership committed to the joint goals of environmental protection and sustainable development. The Foundation was chartered by the U.S. Congress under the National Environmental Education Act of 1990, and also was privately incorporated as a charitable foundation to be funded by government grants, corporate and individual contributions, and Congressional appropriations.

Mr. Herbst enumerated the Foundation's goals in furthering environmental education and training and discussed its aim of supporting "the development, implementation, evaluation, and national and international replication of programs and projects determined to have the best chance of 'making a difference'...in protecting the environment and sustaining our economic development." He concluded by describing the Foundation's current status and staffing, stating that it was ready for full implementation.

United Nations Conference on the Environment and Development by Andrew Wolf

Andrew Wolf, Special Assistant to the Director of the United Nation's Environment Programme, spoke about the United Nations' role in environmental education. In the last 20 years, he said, the organization "has become a focal point for the idea that the world has no boundaries when it comes to environmental protection and environmental awareness." The focus of his address was the United Nations Conference on the Environment and Development to be held June 1-12, 1992, in Rio de Janeiro, Brazil. He described the activities and goals of the conference, which is expected to bring together 150 heads of state and other dignitaries along with thousands of representatives from nongovernmental groups and private sector interests. Mr. Wolf described the conference as "an historic if not unprecedented event in the history of civilization" and stated its overriding goal was to link economic development issues with environmental quality. He stated that the conference would attempt to mobilize people to set a new and more hopeful course for humanity by producing an "Earth Charter" embodying basic principles to govern economic and environmental behavior, developing an "Agenda 21" blueprint for action on issues affecting the relationship between the environment and economy, and agreeing to conventions affecting global climate change and biological diversity.

The Future of Environmental Education by James Moseley

James Moseley, Assistant Secretary for Natural Resources and Environment, U.S. Department of Agriculture (USDA), indicated that USDA has expanded its emphasis on the environment and natural resource management due to both increased public concern for the environment and the results of research that show the effects of human activity on the environment. Mr. Moseley emphasized that the same technological approach USDA has applied for years to solving agricultural problems is now being extended to environmental issues as well, and that USDA has made environmental education a top priority in every department. He highlighted the need for stronger partnerships and communication among agencies working together on the same issues. He emphasized that environmental education should not advocate a position but should teach critical thinking that enhances informed and rational decision-making.

Environmental Education: Where Do We Go from Here? by Louis Iozzi

Dr. Louis Iozzi, Dean of Academic and Student Affairs, Cook College, Rutgers University, lauded EPA's environmental education initiative, offering praise to the Agency's vision in sponsoring the National Environmental Education Act and its work thus far in carrying out the law's mandates. He cited as significant accomplishments the creation of the Office of Environmental Education, the National Advisory Council for Environmental Policy and Technology's Subcommittee on Environmental Education and Training, and an internal EPA task force's strategic plan for environmental education.

Dr. Iozzi called for all members of the environmental education community, including educators, businesses, government agencies, and environmental organizations, to do their part in furthering the goals of the Act. He set forth a number of steps including:

- Forming partnerships and working together to solve environmental problems through consortia, cooperatives, and regional alliances.
- Encouraging the development of master plans for environmental education in all 50 states.
- Pressing Congress to allocate the full funding authorized under the Act.
- Incorporating state-of-the-art educational technologies into environmental programs.
- Developing a strong network to help states link efforts and share ideas.

Dr. Iozzi identified a two-pronged approach for environmental education: infusion into existing curricula and separate coursework. He stated that infusion should be used to achieve educational objectives by applying environmental concepts and issues to the development of critical thinking and problem-solving skills. Dr. Iozzi stressed the need to bridge the gap between awareness and action, helping students develop the skills to motivate and equip them to take responsible action.

Dr. Iozzi expressed concern that environmental science has been emphasized over environmental ethics. He stated that environmental problems are social not scientific, and that environmental education must be taught holistically. Dr. Iozzi also charged participants to define our nation's role with respect to environmental issues and responsibilities in the international community, and to consider multiethnic and cultural diversity when developing programs at home.

A Program for the Future of Environmental Education by Frank Young

Frank Young, Deputy Assistant Secretary for Health, Science, and the Environment, U.S. Department of Health and Human Services (HHS), began his address by remembering the role two teachers had played in his decision to pursue a career in environmental science. From this perspective, he emphasized the value of teacher education in spreading not only knowledge of but commitment to the environmental field. Expanding educational programs for teachers, including summer scholarship programs, should be a major starting point for environmental education in the future.

Dr. Young emphasized the important relationship between environment and health. He indicated that much of his work involved making the critical distinction between real and imagined risks from the risk of lead and dioxin to alar in apples. He emphasized HHS's commitment to environmental health risk education, with a special focus on minority and inner city programs.

Dr. Young described some of the environmental education programs at HHS including graduate and postdoctoral training and career development and a program to bring high school students and science teachers into laboratories at the National Institutes of Environmental Health Sciences (NIEHS) to participate in experiments and update curricula. He also spoke about the Commissioned Corps of the Public Health Service's activities, such as Co-Step, a summer program for high school students pursuing careers as environmental sanitarians or engineers. Dr. Young concluded by emphasizing HHS's commitment to working in partnership with governmental and nongovernmental agencies to promote education relating to environmental health.

An Overview of Environmental Education Activities in Mexico by Alejandro Diaz Camacho

Alejandro Diaz Camacho, Director General of Environmental Education, Ministry of Urban Development and Ecology, provided an overview of environmental activities in Mexico. He described the complex choice Mexico now faces between following a pattern of economic development accepted worldwide or forging a path that guarantees the preservation and protection of the country's remaining natural resources. Five years ago, Mexico initiated an environmental education program to confront the degradation of human health and quality of life. This program has formal, nonformal, and informal components that range from collaborations between the education departments of government and the universities to the establishment of offices of environmental protection in private sector enterprises to extensive use of the media to promote environmental awareness.

Mr. Camacho also described the current efforts to develop an environmental education memorandum of understanding among Mexico, the United States, and Canada. This memorandum is based on the three countries' recognition of the importance of environmental education, the role of governmental leadership, the need to increase environmental literacy, and the mutual benefits achieved by joint efforts among nations.

Closing Remarks by Lewis Crampton

U.S. EPA Associate Administrator Crampton closed the conference by reiterating a number of the goals emphasized by speakers, panelists, facilitators, and other participants throughout the 3-day meeting. The overriding message was the need for all sectors of society, nationally and internationally, to join together in a collaborative effort to foster environmental education and the pursuit of environmental literacy. He emphasized EPA's commitment to environmental education and the Agency's eagerness to support the efforts of all those working toward these goals.

B. PANELS

On Day Two of the conference, three panel discussions were held pertaining to partnerships in environmental education:

- Panel 1: Successful Partnerships to Develop and Deliver Environmental Education in the United States
- Panel 2: Successful Partnerships to Develop and Deliver Environmental Education Globally
- Panel 3: Successful Partnerships to Finance Environmental Education

Each panelist discussed the program he or she represented with respect to its purpose, partnerships, successes, lessons learned, and plans for the future.

Panel 1: Successful Partnerships to Develop and Deliver Environmental Education in the United States

Walter Bogan, Director, Science Resources for Schools, American Association for the Advancement of Science, moderated the panel on environmental education efforts in the United States.

Randall Champeau, Director of the Wisconsin Center for Environmental Education (WCEE), provided an overview of environmental education in Wisconsin, a state that has emerged as a model for state-supported efforts in environmental education. Dr. Champeau indicated that Wisconsin's program includes both teacher and student environmental education mandates. He discussed the formation of partnerships among environmental interests throughout the state, which culminated in the establishment of a Wisconsin Environmental Education Board, a $250,000 per year small grants program, and WCEE. Dr. Champeau described the goals of WCEE and outlined a number of the programs that have resulted from its many supportive partnerships. These programs include teacher training, environmental literacy assessment, conferences, networks, a resource library, and an educational bulletin.

Carol Muscara, Director of the Audubon Science Institutes (ASI), described the programs and partnerships of ASI, one of many educational programs supported by the National Audubon Society. This partnership among business, a federal agency, a nonprofit organization, and teachers provides teachers in school districts that serve minority populations with training and technologies to incorporate environmental education into existing science programs. Ms. Muscara noted that ASI uses "trainer workshops" where teachers participate in hands-on, problem-solving, collaborative learning activities on issues ranging from atmospheric quality to endangered species to solid waste management. Between 1989 and 1991, ASI trained 143 teachers and provided 20,000 students with exposure to environmental issues.

Patricia Borkey, Teacher, Mathematics and Science Center, Richmond, Virginia, described the Center as a consortium of five public school districts encompassing inner city, urban, suburban, and rural school populations. The purpose of the Center is to reach K-12 students with information on environmental issues, including how people impact the environment. The Center sends specialists into classrooms, offers special student lessons, and meets teachers in the field to collect and analyze data. The Center has utilized partnerships with the Chesapeake Bay Foundation, Rutgers University, the University of Delaware, the State Department of Education, the University of California at Berkeley, DuPont Corporation, and the Morgan Foundation to develop and fund programs, including an interdisciplinary study of the James River as an important natural resource.

Lillian Kawasaki, General Manager of the Los Angeles City Environmental Affairs Department, spoke about the challenge of addressing environmental education issues from the perspective of a culturally and economically diverse large local government. Los Angeles has over 3.5 million people, who speak over 60 languages, and also must deal with some of the worst problems in air and water quality, congestion, and vanishing natural resources in the nation. Ms. Kawasaki emphasized that the ultimate solution was to empower the individual and to develop the political and public will to act. She stated that a creative strategy was needed to promote community-based involvement and to reach diverse communities and targeted audiences such as youth and ethnic groups. She described Los Angeles' efforts to redefine the "environment" to include people and their health and emphasized the importance of presenting environmental education in a multicultural context. Ms. Kawasaki described the city's approach in reaching out to communities, youths, and businesses through community meetings, joint projects with youth service organizations and businesses, and an environmental information center.

Herbert Thier, Director of the Chemical Education for Public Understanding Program (CEPUP), University of California at Berkeley, described the program's goal as developing greater public awareness, knowledge, and understanding about chemicals and their interactions with society. CEPUP accomplishes this goal by producing activity-based instructional materials for schools and communities, which provide people with information necessary to make decisions about chemical-related issues based on consideration of evidence rather than on emotional appeals. CEPUP strives to provide scientifically accurate and unbiased materials, and has on its advisory board members that represent a broad spectrum of interests including the U.S. Environmental Protection Agency Region 9, the University of California, the League of Women Voters, Sierra Club, Exxon, and Chevron.

Panel 2: Successful Partnerships to Develop and Deliver Environmental Education Globally

Lynn Elen Burton, Director of Environmental Education, Environment Canada, moderated the panel on developing and delivering environmental education globally.

Augusto Medina, Senior Program Officer for Latin America and the Caribbean, World Wildlife Fund (WWF), provided an overview of WWF as an international family of organizations composed of 30 national organizations throughout the world committed to conserving wildlife and the health of ecological systems. He emphasized the importance of using many tools to promote conservation, including education, legislation, and enforcement. His talk focused on WWF's activities in Latin America and the Caribbean, where present partners include ministries of education, natural resources, and parks; local and regional nongovernmental environmental organizations, regional organizations, and universities; civic groups; teachers; and other community members. Mr. Medina stressed the need to work with local communities from the start in identifying goals and planning programs, to ensure programs address real needs and assist the community in improving their local condition, and to ensure that programs are capable of being maintained by community resources. Mr. Medina also stressed the importance of examining our own resource management and consumption and its impact on global conservation when attempting to shape environmental education programs in Latin America.

Anthony Cortese, Dean of Environmental Programs at Tufts University, identified two critical types of partnerships: those among universities to incorporate environmental and development education into their programs and those to promote environmental literacy. Dr. Cortese described the role universities should play in promoting interdisciplinary environmental education and research. He cited some of the current obstacles to achieving this goal as being attitudinal and structural, relating to the belief that environmental education is a "fad" and suited only for K-12 as well as to university emphasis on non-interdisciplinary research. He also spoke about the efforts of Tufts University to focus the attention of university presidents and deans around the globe on the role of universities in environmental management. Dr. Cortese described the formation of the Tufts Environmental Literacy Institute (TELI) to support the university's own mission of ensuring that all of its graduates are environmentally literate. TELI is a faculty-based interdisciplinary program aimed at assisting faculty in incorporating environmental perspectives into their courses. The belief is that broad and continuing exposure to environmental issues will empower students to become environmentally literate and responsible citizens.

Nan Little, Director of the YMCA Earth Corps, spoke about that organization's commitment to teaching young people leadership skills through environmental education and action. The YMCA Earth Corps is a collaboration of students and teachers from public and private schools, which is supported by business, government, colleges and universities, and not-for-profit organizations. In her talk, Ms. Little focused on international collaborations with YMCAs in other countries and described some recent projects involving students in Thailand, India, Japan, Hong Kong, Singapore, and Malaysia. She emphasized the importance of communication, flexibility, and sensitivity in designing international exchange programs to ensure mutual goals and needs are met, lessons that she believed to be applicable to any partnerships involving youths, governments, or corporations.

William Eblen, President of the Rene Dubos Center for Human Environments, provided a brief history of the Center, including its formation as a collaboration between Rene Dubos, a scientist/humanist and professor at Rockefeller University, and the Total Education in the Total Environment organization founded by Dr. Eblen. He described the Center's purpose "to help the general public and decision-makers formulate policies for the resolution of environmental conflicts and for the creation of new environmental values." The Center has established a forum program to address environmental problems and has pursued numerous environmental literacy projects through partnerships with government agencies, universities, and businesses. Recent projects include a multimedia computer applications software series, an instructional program examining current environmental problems, and an encyclopedia on the environment.

Panel 3: Successful Partnerships to Finance Environmental Education

Kathy McGlauflin, Vice President for Education and Director of Project Learning Tree, the American Forest Foundation, moderated the panel on financing environmental education.

Thomas Benjamin, Staff Director of the Alliance for Environmental Education, discussed the role of corporations in funding and forming partnerships to support environmental education. He cited a number of major corporations, such as Dow Chemical, AT&T, Apple Computers, Proctor & Gamble, and Warner Bros., that have provided assistance to conservation projects and have incorporated a pro-environmental approach into their procedures and policies. Mr. Benjamin indicated that corporations form partnerships for many reasons, including to increase sales and improve corporate image. He said that today corporations often "negotiate" donations by attaching "strings" and serve as conduits to collect money for charities (e.g., Ramada International and American Express have teamed up to donate a percentage of their business proceeds for hotel stays paid for with American Express to Nature Conservancy).

Valerie Williams, Supervisor of Educational Services, Southern California Edison, described the project *Think Earth*, an environmental education program for elementary school children that addresses resource conservation, waste reduction, and pollution prevention. Children learn basic concepts such as everything comes from the environment; skills such as identifying recyclable products; and behaviors such as saving newspapers to recycle. This program was developed by a consortium of companies, government agencies, and educational organizations in Southern California. Sponsoring members finance the project which provides the materials free to schools. Educators ensure that the materials are scientifically accurate, unbiased, and educationally sound.

Annette Berkovits, Director of Education for the Bronx Zoo, provided an overview of Project W.I.Z.E., a multimedia life science curriculum developed by the Bronx Zoo and funded by two federal agencies, three foundations, and one corporation. Project W.I.Z.E. combines classroom study with scientific resources available in modern zoos to challenge students to address wildlife survival. Field trips form the centerpiece of the program to show students how nature works. The project currently reaches thousands of students in 30 states and several foreign countries. Ms. Berkovits described two types of partners: funding partners, who provided the capital, and implementation partners such as school systems, who tested the program's viability. Ms. Berkovits emphasized the value of demonstrating program success in attracting new partners. According to Ms. Berkovits, the project was able to sustain funding, because it "changed, grew, and was able to demonstrate incremental levels of success with professionally gathered evaluation data."

Madeline Strong, Executive Director of the Florida Advisory Council on Environmental Education (FACEE), described the many environmental challenges Florida faces due to rapid population growth and dependence on natural resources for economic well being. She explained the environmental education partnership Florida has developed over the past 20 years, focusing on the FACEE as the central forum for environmental education initiatives. The FACEE, which consists of lawmakers, public officials, agency representatives, and community, environmental, and industrial leaders, is responsible for raising money and coordinating the education grants program. Environmental education programs are supported by a trust fund which collects revenue from various sources, including endangered species license plate sales and fishing license fees. During 1991, the state recommended funding 37 projects at $1.5 million, including a state-wide multimedia campaign for increasing awareness and promoting individual responsibility for protecting Florida's environment.

C. WORKGROUP SUMMARIES AND RECOMMENDATIONS

The conference concluded with a series of workgroup sessions designed to solicit ideas from conference participants about future needs in environmental education and the role of the federal government in meeting and supporting such needs. Participants developed recommendations in each of the following areas: schools (K-12); colleges and universities; museums, nature centers, and parks; community-based youth programs; adult continuing education programs; nonprofit organizations; the business community, workplace, and marketplace; minority and multiethnic communities; government; teacher education; media and entertainment; and environmental health risk education. Two sessions of work groups were held so that each participant was able to attend two sessions on two different topics of his or her choice. The recommendations developed in the workgroup sessions were reported to the entire group in a plenary session. These recommendations are summarized below.

The summaries and recommendations do not necessarily reflect a consensus among participants. Instead they offer a range of views and suggestions. Some common themes, however, have emerged which include:

- Demand for environmental education is high and growing.
- Environmental education efforts are improving and spreading rapidly, but there is no common set of goals or rules that govern such efforts. Efforts are fragmented; linkage and coordination among projects and programs are lacking.
- A wealth of materials, projects, and programs exist, but widespread support, funding, and training are lacking. Overall, quality control is lacking and demand is high for evaluation and identification of good model programs.
- Significant audiences, which include minority and multiethnic communities, senior citizens, the illiterate public, and other adult populations, are being missed.
- There is a strong desire for EPA and the federal government to play a supportive role in environmental education. Some common suggestions relate to:

  - Providing financial support
  - Training teachers and environmental professionals
  - Facilitating information exchange and electronic networking
  - Facilitating partnerships among organizations and sectors
  - Facilitating coordination across programs and sectors
  - Evaluating programs and identifying models
  - Setting national goals and guidelines

- Establishing awards and recognition programs
- Hosting conferences and workshops

Schools, K-12

Current Status: Although good environmental education programs do exist in schools, such efforts are fragmented nationally. Many teachers believe environmental education is important but lack the materials, training, funding or "support from above" to teach it. There is uncertainty about whether to infuse environmental education into existing curricula or to teach it as a separate subject. Environmental education also lacks consistency in content and goals, and materials often lack relevance to community issues.

Where to Go from Here: Environmental education needs to become part of K-12 curricula and should be a collaborative effort among teachers, administrators, and the school board. Environmental education could be a vehicle for reform and restructuring in schools by providing opportunities for interdisciplinary study, not just for math and science education. Environmental education activities should be participatory, action oriented, skill and knowledge enhancing, and focus on the real world.

Recommendations for EPA and Federal Government:

1. The federal government should facilitate **teacher training.**
   - Preservice and in-service training needs to be built in to teacher training programs. The federal government may provide leadership in encouraging colleges and universities to emphasize environmental education in teacher training programs.
2. The federal government should facilitate **information exchange.**
   - EPA could inventory and connect environmental education networks and make existing clearinghouses more accessible and affordable to users.
   - EPA could inventory and distribute scientific and technical information as well as information on successful programs and available grants and awards.
   - States should be encouraged to share their successes, and the federal government could collect and make information on state models available.
   - The federal government should help ensure that poorer school districts have access to high-quality materials, are linked to a supportive network, and informed of how to obtain or use appropriate materials in their classrooms.
3. The federal government should **fund** worthwhile projects and provide information on how to apply for grants.

- The federal government should "stay out of curriculum development" and instead fund research for educators to develop their own materials, provide schools with low-cost copyrighted materials for classroom use, and provide seed money for environmental projects.
- The federal government should hold workshops in grant writing and develop or strengthen networks for helping educators become more aware of financial assistance, including partnerships with state resource agencies and industry.
- The federal government, especially EPA, could use grant dollars as an incentive to states to develop and implement master plans, which include teacher education and competency examinations.
- The federal government should fund programs that emphasize hands-on activities and teacher training. They should promote community-based activity and help solicit Native Americans, retired educators, and others to serve as mentors.

4. EPA could establish an **awards program** to recognize teachers for successful projects and models.
5. EPA should hold **regional workshops** for teachers, school board members, administrators, and students on how to implement and maintain environmental education programs.
6. The federal government could help establish **objectives for environmental literacy** and promote it as a national priority.

Colleges and Universities

Current Status: Environmental education in colleges and universities is important, but fragmented and underfunded. Interdisciplinary issues such as environmental education rarely fit into existing college and university structures, which often have competing departments and emphasize faculty research. There is lack of coordination among types of institutions (e.g., junior and community colleges, graduate and undergraduate institutions, and universities) and among resident instruction, research, and extension or outreach.

Where to Go from Here: Colleges and universities need to acknowledge the value of partnerships among academia, government, and industry. They need to break down traditional barriers to facilitate multi- and interdisciplinary programs. They need better information sharing through clearinghouses, teleconferencing, and telecommunications networks. They also need to recognize that environmental education is broad and encompasses awareness, knowledge, tools, skills, values, and motivation.

Recommendations for EPA and Federal Government:

1. EPA could sponsor **regional conferences** to help foster partnerships among government, industry, and academia.

2. EPA could encourage better **coordination** within and among colleges and universities and recognize that environmental education is a multistage process.

    - Through the Federal Task Force on Environmental Education, EPA could sponsor regional strategy sessions for environmental education coordinators at colleges and universities. These workshops could cover planning, strategy, implementation, coordination of in-kind sessions, and informed decision-making.

    - EPA could work with national coordinator groups such as the National Association of State Universities and Land Grant Colleges to stimulate coordination among teaching, research, and extension, and across departments and institutions.

3. EPA could facilitate **information sharing** and **electronic networking**.

    - EPA could provide easier access to existing data bases on environmental studies and environmental education.

    - EPA could fund the consolidation of information on all federal programs and success stories in a clearinghouse. EPA also could produce a document, including case studies, describing the environmental education activities of each federal agency, available grant money, and how to apply for grants.

4. EPA could sponsor an **awards program** to recognize universities that have sound environmental practices and programs.

5. EPA could coordinate **internship programs**, starting with the organizations represented at the conference.

Museums, Nature Centers, and Parks

Current Status: Environmental education in museums, nature centers, and parks is generally very good and improving. These institutions are good forums for linking informal and formal education and for enhancing school learning experiences. Funding, however, remains a problem and more quality control is needed.

Where to Go from Here: Museums, nature centers, and parks should be used more often to help infuse and integrate environmental education into schools. Adults are an important target population, and projects should emphasize adults and children working together as a team. Projects should encourage environmentally responsible action, and evaluations of changes in behavior or attitude should be conducted.

Recommendations for EPA and Federal Government:

1. The federal government should use **existing resources** rather than developing new materials.

2. The federal government could set up **regional workshops or forums** to foster collaboration and information sharing across sectors, especially between schools/universities and museums, nature centers, and parks.

3. The federal government should encourage the development of **regional advisory boards** responsible for implementing programs that respond to regional needs.

4. EPA should provide **financial support** and should distribute grant money with geographical equality and with an emphasis on inner city populations.

5. EPA could assist in establishing **methods to evaluate programs** and to measure changes in behavior and attitudes.

6. EPA could broaden **staff development** and work more closely with other federal agencies, especially in placing interns and fellows widely in various environmental and natural resource agencies.

Community-Based Youth Programs

Current Status: Many excellent community-based youth environmental education programs exist. These programs, however, are missing important audiences, are not well coordinated at the local level, and need better access to program materials. Youths are not involved enough in program planning and implementation.

Where to Go from Here: Leader training, including training of volunteers, should be a priority. Young people should be used as educators, peer teachers, and mentors. Environmental education needs to include urban environments by dealing with environmental risk and other issues relevant to urban audiences. Programs need to target minorities and ethnic groups. Programs also need to be coordinated with schools and among various youth-serving organizations.

Recommendations for EPA and Federal Government:

1. The federal government needs to make youth education a **funding priority.**
    - EPA should assign a certain percentage of grant dollars to nonformal youth education programs and for projects developed by youth.
    - Funding should target projects that are replicable.
    - Grants should be awarded for projects that target community-based minority and ethnic groups.

2. The federal government should promote the use of youths as educators by hosting **youth training workshops** and involving youths in setting priorities and developing and implementing programs.

3. The federal government could identify **model strategies** and provide **technical assistance** to help community-based youth programs coordinate their efforts and focus on specific issues such as pollution prevention, environmental risk, and sustainable development.

4. An EPA **clearinghouse** would be valuable if it could be made accessible through existing networks, be used to identify current youth programs, and be maintained by EPA over the long term.

Adult Continuing Education Programs

Current Status: Adult continuing education programs for environmental education are not easily identified, coordinated, or addressed. Good programs and materials are missing important segments of the population, including minorities, senior citizens, and the illiterate public. It is a challenge to educate an adult population who may have passed the peak in their learning curve and in which habits are more ingrained.

Where to Go from Here: More effective adult education strategies and materials are needed. Programs should target segments of the population not currently being reached such as minorities, senior citizens, and the illiterate public. Adults could participate as peer educators and mentors. Communities need to develop an agenda for environmental literacy and action and should host forums on environmental issues of common concern such as "health" to bring adults with various backgrounds and ages together. Tools need to be developed to evaluate levels of success and to learn what motivates people to move from knowledge to awareness to action.

Recommendations for EPA and Federal Government:

1. The federal government, especially EPA, should emphasize and prioritize projects in nonformal adult education through **funding and technical support.**

    - EPA should support adult continuing education programs in universities as well as in museums, nature centers, and parks.

2. EPA should sponsor **regional and local conferences** that focus on educator training, assessing local resources, and program evaluation. Conferences could culminate in community environmental issue forums. EPA could promote and support workshops at the local level targeted for specific audiences such as minorities and senior citizens.

3. The federal government could play a major role in **facilitating partnerships** among academia, nonprofit organizations, businesses, and government agencies.

Nonprofit Organizations

Current Status: A broad range of nonprofit organizations develop environmental education curriculum materials, products, and services. Many local and national programs, networks, and initiatives exist. New efforts are needed to link programs and resources and to promote local initiatives.

Where to Go from Here: Environmental education should be mandated at the state or local level but driven by grassroots networks. Nonprofits need to make use of their unique position to create, expand, and leverage community resources. They should develop a handbook of successful case studies to encourage supportive state legislation. The following issues need to be resolved: how to reach the most people; how to finance programs; how to build, expand, and maintain existing networks and resources; and how to disseminate available materials and training. A process is needed to review and evaluate existing information and programs.

Recommendations for EPA and Federal Government:

1. Leadership from the federal government, from the President on down, is critical to the establishment of environmental education on the national agenda. The federal government needs to take the lead in promoting environmental education through highly visible **publicity campaigns.**

2. EPA and other federal agencies should provide **funding** to support the following efforts:

    - To build local collaboration and partnerships among business, government, and nonprofits.

    - To develop a set of literacy guidelines or standards that would outline what students should learn to meet graduation requirements.

3. EPA and other federal agencies should develop **partnerships** with nonprofit organizations.

4. EPA should work with other organizations to create a centralized "Who's Who and Who's Doing What" **information clearinghouse** that is accessible at the local level.

5. EPA and other federal agencies should sponsor **conferences and forums** for youths and people of color.

Business Community, Workplace, and Marketplace

Current Status: Environmental education efforts in the business community, workplace, and marketplace vary greatly ranging from educating businesses to adopt sound environmental policies to educating workers to cultivate environmentally sound habits to educating consumers and stockholders to be aware and supportive of environmental concerns and programs. Businesses face barriers to implementing environmental education programs such as mistrust about corporate motives and funding limitations.

Where to Go from Here: Businesses need to be proactive, get top level management support, and emphasize that good stewardship is good business. Environmental issues need to be made relevant to the business community by focusing on issues such as health and scarcity of natural resources. The future of environmental education in the business community is tied to increasing partnerships and coalitions with nonprofits, communities, and state and local governments. Business schools should build environmental education into their curricula.

Recommendations for EPA and Federal Government:

1. EPA needs to foster **partnerships** between the business community and nonprofits, academia, and government.

2. EPA needs to promote **information sharing.**

    - EPA could include businesses in its clearinghouse.
    - EPA could make information available to businesses on corporate-community partnerships to serve as model programs.
    - EPA could provide training to nonprofit organizations and local governments on how to involve businesses.
    - EPA could provide more environmental education materials to businesses on compliance, pollution prevention, and cross-media issues.

4. EPA should sponsor a series of **regional conferences** that target businesses and labor representatives to help define environmental education for the business community. EPA could facilitate **community meetings** to help businesses communicate with their communities on local issues and encourage the formation of **regional coalitions** of schools, businesses, and local governments.

5. EPA could make some **grants** dependent on corporate sponsorships, such as tying grants to corporate matching programs

6. EPA could establish an **awards program** to recognize businesses for successful projects and models.

7. The federal government should encourage **environmental literacy** in institutions of higher learning, especially in business schools, to target future employees and business leaders.

Minority and Multiethnic Communities

Current Status: Minority and multiethnic communities are often disproportionately affected by environmental pollution problems. Nonetheless, few programs in environmental education target these communities. Barriers to implementing programs include language and cultural differences, priorities, and needs; limited access to natural areas; and lack of scholarships and internships. Environmental education programs are also inconsistent in whether they include socioeconomic and societal issues or just science.

Where to Go from Here: Minority and multiethnic communities need to be targeted for involvement in the environmental movement. More community-based environmental education efforts that involve parents, students, teachers, churches, and community organizations are needed. Programs need to be customized to deal with issues that affect individual communities. Access to natural areas needs to be expanded, and environmental education needs to include the urban environment and health issues.

Recommendations for EPA and Federal Government:

1. EPA and the federal government can improve **training** opportunities for minorities and multicultural communities.

2. EPA and the federal government can increase **funding** for programs that target minorities and multicultural communities and sponsor grant workshops that teach how to effectively compete for grant money.

3. EPA and the federal government should ensure that **curriculum development** and **information dissemination** efforts are sensitive to cultural diversity and reach minority and multiethnic communities.

Government

Current Status: Environmental education in government is a recent goal, but so far has emerged more on paper than in action. Government is lagging behind other groups and suffers from lack of coordination. Government often does not understand the difference between information distribution and education. Nonetheless, many states are moving toward developing statewide plans. Offices for coordinating environmental education have emerged at the national, state, and local level. The use of partnerships among different sectors to share resources is a growing trend. A tremendous growth in the development of materials has produced an information glut and distribution problem. Barriers include insufficient funds, quality control, and involvement by educators; fragmentation; lack of trained personnel; few credible studies; and public resistance.

Where to Go from Here: Government should listen and respond to needs; develop a common language; and take the lead in developing a vision, setting goals, and communicating the message to a diverse audience. Government should help spread information and link local efforts with businesses. Government should offer training for business managers to bring environmental education into the workplace and should support teachers and students (especially minorities) in training for environmental careers. Government should market environmental education to businesses in "business terms."

Recommendations for EPA and Federal Government:

1. The federal government could develop a **directory** of current environmental education efforts in government and how and where to obtain funding from federal agencies.

2. EPA could help **educate federal employees** in environmental issues and practices and help **define each agency's role** in environmental education.

3. The federal government could play a key role in creating and supporting **networks and partnerships** among academia, industry, and nongovernmental organizations for gaining access to funds and information.

4. EPA's **funding** should be directed toward partnership projects and toward creating a fund to support teacher efforts.

5. EPA could provide **technology links** that allow environmental educators to search for accurate technical information, share ideas, and keep in touch, such as through a toll-free hotline.

6. EPA could sponsor **regional workshops** and organize smaller environmental summits throughout the country.

7. The federal government needs to add environmental education to the U.S. Department of Education's **America 2000** efforts to improve public education.

8. The federal government could assist in **quality control** of materials by establishing standards and guidelines.

Environmental Education for Teachers

Current Status: Teacher education varies widely from excellent to nonexistent. Most states do not have teacher environmental education mandates. Overall, teachers are not well versed in environmental issues. Teacher training on how to effectively use materials is lacking, and existing training programs have not been evaluated for effectiveness. Most environmental education occurs due to individual teacher initiative. Barriers include lack of money, time, and commitment; low pay that discourages innovation; and few jobs for teachers specializing in environmental education.

Where to Go from Here: Teachers need environmental education training, and standards for instruction should be established at the local and state level. Consideration should be given to state-mandated teacher environmental literacy programs and to using a K-14 model to carry education from elementary to high school to college. Training is needed both preservice and in-service. Debate on teacher education issues needs to involve more teachers. Funding options need to be explored, especially options involving business support.

Recommendations for EPA and Federal Government:

1. EPA and the federal government should serve as expediters, **disseminating existing information and facilitating networking and partnerships.**

    - EPA should not develop new curricula or programs at the national level, but should use existing materials, networks, and experts in the field.

    - EPA could publish and distribute guidelines on how to develop local materials or how to adapt existing materials at the local level.

    - EPA could develop a summary of college and university teacher education efforts along with information on effective models.

- EPA could establish a toll-free hotline or cable television network for updating teachers on federal government environmental education activities.

2. EPA should establish two **teacher advisory councils** to represent both elementary and secondary education.

3. The federal government could encourage textbook publishers to incorporate **environmental information** into their materials and encourage colleges and universities to make **environmental literacy** a graduation requirement.

4. EPA and the federal government need to provide **funding** for innovative teacher education programs that are interdisciplinary, not just math or science based. Partnerships among federal funding agencies need to be encouraged.

Entertainment and Media

Current Status: The entertainment industry and the media emphasize environmental awareness rather than environmental education that leads to personal, organizational, or community action. The media lacks dimension in its treatment of environmental issues and looks at problems rather than solutions. The media often doesn't know where to get accurate and balanced information. The environment is not yet part of daily media and entertainment programming, but some important messages are emerging (e.g., on recycling). The media lacks followup, and there has been little assessment of the effects of the media and entertainment on people's attitudes and actions.

Where to Go from Here: Partnerships between the media and agencies, organizations, and educators are needed. National criteria and guidelines need to be developed to exercise quality control over information in the media relating to the definition of the environment and environmental programming, the types and availability of multimedia technology, and the educational aspects of environmental programs.

Recommendations for EPA and Federal Government:

1. The federal government and EPA could develop **criteria and guidelines** for environmental programming to ensure environmental messages are educational rather than propaganda. EPA's National Environmental Education Advisory Council could take the lead in this effort.

2. The federal government could develop **strategies** for infusing all forms of media and entertainment with environmental information and raise the media's **awareness of resources** available to them at local, state, regional, and national levels to assist the industry in producing environmental education messages.

3. EPA can encourage **partnerships** between the media and other industries, nonprofit organizations, and academia.

Environmental Health Risk Education

Current Status: Little environmental health risk education is taking place. K-12 curricula in this area is almost nonexistent, and little instruction exists in medical schools. Awareness is increasing, however, and some programs are emerging. Some agencies are leading efforts that include evaluating public perception of risk and identifying good education strategies. Barriers include decentralization of education, lack of resource materials, and a wide gap in understanding.

Where to Go from Here: Environmental health needs to be part of environmental education, especially in science. Environmental health risk education must provide accurate and realistic assessments of relative risks and hazards. Teachers need training and tools with which to teach. Materials need to be packaged so teachers can easily infuse them into existing subjects. Instruction should not be limited to the sciences, but should encompass economics and sociology as well. Physicians should get involved in educational efforts but many currently do not understand relative risk and environmental hazards. The issue of environmental equity needs to be closely examined because minorities and disadvantaged groups often have the greatest need for environmental health information.

Recommendations for EPA and Federal Government:

1. The federal government could promote **partnerships** among government agencies, educators, the private sector, and health professionals to fund and develop programs.

2. EPA could **fund** environmental health risk education programs.

D. SPECIAL PRESENTATIONS

TIME-Warner Environmental Education Campaign by John Heinritz and Kathleen Helppie

Day Two concluded with a banquet and special presentation of the TIME-Warner environmental education campaign, "Tweety's Global Patrol." John Heinritz, Vice President of International Marketing Operations for Warner Brothers, Inc., and Kathleen Helppie, Vice President of Production and Administration for Warner Brothers, Inc., presented an overview of this campaign with video excerpts and slides.

The New Explorers PBS Television Series by Richard Stephens and Bill Kurtis

Richard Stephens, Associate Director of the U.S. Department of Energy (DOE), Office of Science and Education, and Bill Kurtis, President of Kurtis Productions presented the PBS television series *The New Explorers* at a luncheon on Day Three of the conference. The presentation included videotape excerpts of the series, which represents a partnership among DOE, Kurtis Productions, Amoco Corporation, WTTW TV in Chicago, and Waste Management, Inc.

SECTION TWO

SPEECHES

Welcome

by

Lewis Crampton, Associate Administrator for Communications,
Education, and Public Affairs, U.S. Environmental Protection Agency

I would like to personally thank everyone involved in planning this conference. I especially want to thank EPA's 10 regional offices and EPA's co-sponsors for this conference—the 15 other federal agencies that make up the Federal Task Force on Environmental Education. I'd also like to thank others who have offered their advice and support, especially groups like the North American Association for Environmental Education (NAAEE), the Alliance for Environmental Education, and Renew America.

We are all here at this conference to "build a shared vision for environmental education," and the federal government is here especially to launch our new environmental education program. Our purpose is to expand our network of communication and to build upon existing partnerships. A major goal is to listen to your ideas and suggestions on where environmental education should be headed in the future, to learn from your experiences, and to listen to your advice on how the federal government can best support the nation's environmental education efforts. The real work of environmental education is accomplished in the field. The federal government can help by providing leadership, context, and direction.

This conference is a long-awaited "curtain raiser" on the National Environmental Education Act (NEEA). Over the next few days, we hope to explore our opportunities and set some realistic goals for the future. Above all, we must recognize that our approach to environmental education is as a collective; many of the people who can make this program work are here in this room.

In developing our conference agenda, we tried to reach out and involve a wide range of individuals active in environmental education. To accomplish this goal, the conference includes speeches, panel presentations, working group sessions, exhibits, as well as a reception, banquet, and luncheon. Our hope is to make this event as interactive as possible, while still sharing essential information.

Day One—Adding the 2 E's to the 3 R's

The first day of our program will address the importance of integrating environmental education into the fundamentals of education. Because of the President's interest in improving education nationwide, the NEEA and this conference offer prime opportunities for focusing national attention on environmental education. Secretary Manuel Lujan from the U.S. Department of the Interior and Deputy Secretary David Kearns from the U.S. Department of Education will be talking to you about these issues tonight.

Our most critical strategy in integrating environmental education goals into the fundamentals of education is to build upon, implement, evaluate, and sustain partnerships. We need partnerships at all levels, within and among federal agencies, between government and business, between government and nonprofit organizations, and between schools and communities.

Day Two—The Current Status of Environmental Education

On Day Two, we will evaluate the current state of environmental education in our country and how we arrived there in order to provide a framework for assessing our future needs. We will examine how environmental education has evolved over the past 20 years, since the first Earth Day. We will also provide information on the new National Environmental Education Act, and how EPA and other federal agencies are implementing the new mandate through the Office of Environmental Education. We will also discuss a new public/private foundation that has been established to leverage private sector investments into the education program.

The focus of Day Two will be on the panel presentations. Three panels, representing a broad range of organizations involved in environmental education, will offer a sampling of the types of programs underway, their experiences in establishing partnerships, and their thoughts on how the federal government can support their efforts. These experiences, we think, will resonate with your own and prompt more creative, effective ideas.

In our exhibit hall, throughout the day, 50 exhibitors will be available to provide information about their programs. Finally, in the evening, we will introduce our new National Environmental Education Advisory Council. Then Warner Brothers, Inc. will present the new global environmental education campaign they have developed in cooperation with EPA and the Alliance for Environmental Education.

Day Three—Where Do We Go from Here?

The last day of the conference will focus on the future of environmental education. We will be breaking up into small working group sessions to solicit ideas from participants on environmental education in schools, universities, nature centers and parks, nonprofit organizations, the business community and the workplace, government, and the media. Bill Kurtis, an award-winning journalist, will also present an exciting luncheon program on the PBS environmental science education series, "The New Explorers."

In the afternoon, the Director General of Environmental Education in Mexico will present efforts currently underway among the governments of Mexico, Canada, and the United States to formalize cooperation on environmental education.

We thank you for your participation in this 2 1/2-day program, and look forward to working with all of you in the future.

Keynote Address - Building a Shared Vision for Environmental Education

by

F. Henry Habicht II, Deputy Administrator
U.S. Environmental Protection Agency

There is no rhetoric, no hyperbole, that does justice to the possibilities of environmental education. EPA is proud to be part of the America 2000 effort, along with Education Secretary Lamar Alexander and Deputy Secretary David Kearns, and, most importantly, the President. We are all committed to promoting these goals for education, as well as adding an environmental component to these goals. The environment is important in its own right, but it will also give young people a context for learning science, mathematics, and other subjects, and will give a real-world orientation to learning.

It is exciting for EPA, a relatively young and energetic agency, to have environmental education be a fundamental part of our agenda. With our 20 years of experience in environmental protection, we have learned that the long-term sustainability of the resources of this planet requires building environmental literacy among all people in this country and overseas. Environmental education is also exciting for our people in the Agency who find it tremendously rewarding to work with young people and people from diverse communities around the country, and to see firsthand the energy that is out there.

Being involved in environmental education also gives perspective to our task at EPA and helps us to better understand our mission. An important part of perspective is knowing what we do well and when we don't have all the answers. A lot has already been done in the field of environmental education and EPA has to build on that foundation. Our goal is to institutionalize the means for people with expertise in the government to work effectively with everyone out in the communities, and with the millions of people in organizations throughout the country, who are committed to environmental protection. We need to facilitate this generation of ideas, to publicize and share ideas around the country, and to put a mechanism in place to continuously improve the process of building environmental literacy and preparing the nation to make environmentally sound choices in the future.

At EPA, the timing is perfect to set new and high expectations. We want to build on our responsibilities and accomplishments in science and regulations, but also to build an ethic of pollution prevention. We want to work toward integrating the environment into the fabric of society and of life itself so that people think about the environment before they make decisions, rather than making decisions and then thinking about the environmental consequences. Environmental education is key to this effort. EPA needs to create an alliance with individuals and institutions to help them make environmentally sound choices and conduct life in an environmentally sound way. We need to pool resources and reach out to people through schools, community groups, and organizations to build partnerships.

EPA has set a high priority on building partnerships in both the public and private sectors. We have been successful in getting federal agencies that have tended to be "turf conscious" to work effectively with one another. Environmental education is an issue that tends to transcend turf and energize people. The following are a few of the federal agency partnerships EPA has worked to establish:

- The Federal Task Force on Environmental Education is a partnership among 16 federal agencies. This very effective group has been instrumental in sponsoring this national environmental education conference.
- EPA has signed formal agreements with the U.S. Department of Agriculture, the U.S. Department of the Interior, the Forest Service, the Soil Conservation Service, the Fish and Wildlife Service, and the Army Corps of Engineers to implement the T.R.A.I.L. BOSS program. This program is designed to teach leaders specialized skills for training and leading volunteer conservation project crews.
- We have an agreement with the Peace Corps to support their efforts in training their volunteers overseas in environmental education.
- We have an agreement with the U.S. Department of Energy to support initiatives to incorporate the environment into math and science education.

EPA is also building partnerships with schools and universities across the country, including sponsoring fellowship programs. We've also created a new periodical called *EPA Earth Notes*, which contains practical ideas for teachers (K-6) and which will be widely disseminated.

EPA has established an important partnership with the private sector through the creation of the National Environmental Education and Training Foundation, chaired by Governor Kean of New Jersey. We also are supporting a number of partnership projects with the private sector, including:

- The General Motors videotape "I Need the Earth and the Earth Needs Me."
- The TIME/Warner Environmental Education Campaign.
- The Dow Chemical Great Lakes environmental education program.

Other agencies have also formed interesting partnerships in the private sector. For example, the U.S. Department of Energy, WTTW TV in Chicago, Bill Kurtis Productions, Amoco, and Waste Management have produced "The New Explorers" environmental science education series.

EPA has established formal partnerships with youth groups such as the Boy Scouts and the Girl Scouts. The North American Association for Environmental Education (NAAEE) is working with EPA and other institutions to build a trilateral educational initiative among the United States, Canada, and Mexico.

These examples, and others, represent EPA's commitment to developing and sustaining formal partnerships. The goal of all of our efforts is to develop a message about the future which is a message of hope. We can protect the environment and be stewards at the same time. I want to close with a couple of stories that show the progress that we're capable of making.

The first one is a true story from the island of Borneo. In the 1950s, the Dyak tribe had a terrible infestation of malaria, so the World Health Organization decided to spray the island with DDT. The DDT killed the mosquitoes and the malaria subsided, but the DDT also had several side effects. The chemical killed a predator that feeds on thatch-eating caterpillars; the caterpillars proliferated, eating the thatch on the roofs which caused the roofs to cave in. More importantly, however, the cats on the island ate DDT-infested gecko lizards. The cats died and, as a result, there was an increase in the rat population. The growth in the rat population in turn caused an outbreak of the plague. Experts then decided to airlift in live cats to take care of the rat problem.

This story shows how far we've come in understanding interrelationships, and that the environment is an integrated fabric. We realize now that we need to understand the range of consequences of the decisions that we make.

The second story is about a young man named Joseph Viscovsky who was recently honored as one of President Bush's "points of light." He saw the danger of pollution in his own hometown of Shoreview, Minnesota, which was hit by a drought. He read that planting trees was a good way to foster conservation and promote a lot of other positive environmental effects, so he persuaded nursery owners in his state and others to donate over 3,000 trees to his small community. Then he convinced the Arbor Day Foundation to provide the Shoreview community with educational brochures describing the importance of trees, and he mobilized area organizations to build education programs into the local schools. When he did all this, he had just turned 14.

This example illustrates the type of potential we can tap by working together to instill in all the bright young people in the country a sense of how things interrelate in the environment and how they can make a difference.

Jacques Cousteau has made a distinction between instruction and education. Most of what happens in schools is instruction, but the sum total is education, which is preparing people to deal with unforeseen and unforeseeable situations by giving them information that they can use to make judgments. In the environmental education effort, the federal government must serve as a helper and a partner. Our role is to energize and put the wind to the backs of the millions of people who will collectively come up with the answers.

Environmental Education Priorities at EPA

by

William K. Reilly, Administrator
U.S. Environmental Protection Agency

Earlier this year, President Bush unveiled "America 2000," a bold new National Education Strategy. This strategy anticipates major changes in our attitudes about learning in all of America's 110,000 public and private schools—changes in every home and in every community. Environmental education will be a central component of America 2000, and EPA is excited to join this effort. Under the National Environmental Education Act signed into law by President Bush a year ago, EPA has established an Office of Environmental Education. For the first time in the Agency's history, our statutory mandates now formally include education in addition to enforcement and regulation.

Our education goals are broad:

- To increase environmental literacy throughout the country.
- To foster international cooperation, promoting environmental awareness and environmental stewardship.
- To encourage young people to pursue careers in math, science, engineering, and other fields essential to future environmental improvement.

All these steps are important because, in the end, environmental education is about promoting stewardship and about developing a lasting ethic that recognizes the importance of healthy/natural systems to the future well-being of our country, indeed of the entire planet.

Our success in achieving these goals depends on engaging many others outside our Agency. A recent Report to Congress on Environmental Education noted:

> Only through cooperative efforts and partnerships will we be able to accelerate...environmental education programs, individual...awareness, and the development of a more scientifically and technically literate workforce.

Consequently, education efforts at EPA will be built around cooperation. We will work with other federal agencies, pursue public/private partnerships outside the government, serve as a clearinghouse for environmental education materials, provide seed money to state and local governments and to private groups, and reach out to those traditionally not well represented in environmental education programs, particularly inner-city youth and Native Americans. The following are a few of the programs EPA is implementing this fiscal year:

- Awarding nearly two and one-half million dollars in grants to support promising, locally initiated, environmental education projects.

- Awarding a major grant of nearly two million dollars to a consortium of universities and nonprofit organizations for a nationwide environmental education and training program.

- Developing internship and fellowship programs for up to 250 students and 50 teachers in environment-related positions in the federal government.

- Recognizing outstanding teaching; excellence in print, film, and broadcast education efforts; and literary contributions—so vital in fostering appreciation for natural systems. Many of us, for example, remember the impact of Rachel Carson's Silent Spring.

EPA has also helped to set up the National Environmental Education and Training Foundation. Under the chairmanship of Drew University President and former New Jersey Governor Tom Kean, the foundation is encouraging private support for environmental education activities. Earlier this year, I accepted the first contribution of $10,000 to the foundation from Times Mirror Magazines in New York City.

Environmental education gives us a context for understanding who and where we are, how far we have come, and how far we have to go, and for considering 20 years of progress since the first Earth Day in 1970, the year in which EPA was created. We need to recall the late sixties and early seventies: times of belching smokestacks, and fecal coliform you could not only smell, but see, in so many of our nation's lakes and rivers.

There are many indicators of our progress since then: particulate emissions in the nation's cities are down 63 percent, carbon monoxide is down 40 percent, and sulfur dioxide is down 27 percent. The progress in water quality, while less dramatic, is no less tangible. In the Great Lakes, for example, where some feared during the sixties that it was only a matter of time before we would be able to walk across Lake Erie, today we see increasing populations of fish and wildlife. This environmental progress was achieved during the past 20 years, in a time span in which 80 million new automobiles came on to the road, and in which our country saw a real 70 percent increase in our Gross National Product.

Environmental education helps us understand the work that remains to overcome more complex contemporary environmental problems. Half of all water pollution in the United States, for example, is no longer attributable to factory pipes and municipal discharges, but rather to runoff from nonpoint sources, like farms, forests, mines, and city streets. Consider that in 1988, the amount of used motor oil poured down storm drains or sent to landfills by do-it-yourself auto mechanics was equivalent to 16 Exxon Valdez oil spills. Pesticide residues in food, climate change, depletion of upper atmospheric ozone—these may not have been the concerns of the 1970s but they are very much the preoccupation of the 1990s. Overcoming such challenges will require an aware, responsible, and committed public, a public that intends to keep pace with the unfolding dramas on the environmental scene.

This was demonstrated in very practical terms during a recent visit to Eleanor Roosevelt High School in Greenbelt, Maryland. There, I conducted water quality experiments with future scientists in the school's innovative Environmental Studies Class. These students are learning and applying science and other disciplines to real world situations, to make these courses of instruction come alive.

Similarly, last February, I traveled to Austin, Texas, where I joined high school students taking water samples as part of an early warning system for the Lower Colorado River Authority. These students are learning how water quality serves as an indicator of the overall health of the Lower Colorado River watershed and the plants and animals that live there. Such in-the-field experience brings home the value of science—showing how science can be applied to practical problems to protect the resources we value.

Two and a half millennia ago, a Chinese philosopher, Lao-Tsu, delivered a prophetic message. "In the end," he wrote, "we will conserve only what we love...we will love only what we understand...we will understand only what we are taught." Today, we are making progress in creating an America in which we and our children and generations to come live in harmony with the natural systems on which all life depends.

Environmental Education and America 2000

by

David Kearns, Deputy Secretary,
U.S. Department of Education

I'd like to begin with a couple of examples from my own family that illustrate the progress being made in environmental education in this country. My son is an environmentalist and a rock climber in the Southwest. As a result of working with the U.S. Forestry Service in Bonner's Ferry, Idaho, he has met a lot of forestry people. He writes to me periodically and says, "Dad, do you know what your friends in Washington are up to now?" Recently, I received a note from him in which he used the word "tradeoff." When I read that phrase, I knew he was beginning to gain an understanding of the complex relationships involved in environmental protection. The second example illustrates the progress we've made with even our youngest children. The other day someone in my family dropped an aluminum can into a wastebasket. My 5-year old granddaughter picked it out of the trash and brought it back into the kitchen to be recycled. These two simple examples illustrate our progress, but we still have a long way to go.

We have always done well in this country in educating the top half; we have never done well at educating everyone. Our international competitors, on the other hand, are educating 90 to 95 percent of their people to an extraordinarily high level, probably equivalent to a 4-year college degree in the core subjects. Unless we educate everyone in the United States to that same high level, we are not going to be able to compete with the rest of the world.

Before I speak with you about America 2000, and its critical connection with environmental education, I would like to share with you a personal story about different approaches to total quality management. In 1980, as part of my benchmarking activities for Xerox to learn about the best business practices in the world, I visited the Toyota Company. While flying to Japan, I was reading a *Forbes* article about a 3 billion dollar investment that the General Motors Corporation was making in improving reliability, improving quality, and reducing costs. A cynical writer concluded at the end of the article that General Motors would not meet their projections.

When I arrived at Toyota, they had the *Forbes* article copied and pasted up all over their building—and the magazine had only been out for 10 days. The company was in the process of changing every reliability target, every quality target, and every cost target. They assumed that General Motors would achieve everything they said they would, and that in order to remain competitive on an international basis Toyota needed to adjust their goals accordingly. At the end of that week, I started to write down my thoughts on why Japanese business people were taking American business people to the cleaners. First, I jotted down terms like monolithic society, planned economy, cost of capital, and unlevel playing field—all of the rationalizations that we invoke when we are failing. Finally, I wrote down two words, "expectation levels," and circled them. I concluded that, in a qualitative sense, Japanese business leaders had substantially higher expectations for success than we did in the United States. With this realization, I became determined to change all of our goals at Xerox, convinced that we needed a completely new strategy and process for the eighties.

The education reform and restructuring movement in the United States must employ that same strategy of high expectation levels. The Japanese university and college system may not be as good as that of the United States, but, at the elementary and secondary school level, not only the Japanese, but the Northern Europeans, the Germans, the French, and a number of other Asian countries have a substantially better system than we do. If the United States is going to make positive changes, we must have goals and they must be clearly understood nationwide.

A year and a half ago, the 50 governors in the United States agreed with the President on education goals for the nation. The six national education goals are identified in Appendix K. This is the first time in the country's history that we have had national education goals. A lot of people have assailed these goals, saying that they are not reachable, but I cannot imagine a country not having education goals that are at the highest level. In fact, right now, while we are making some improvements in education, the Northern Europeans, the Japanese, and some other Asian countries are improving at an even faster rate, continually widening the gap.

The United States needs high goals, but to achieve them we also need a strategy. That is what America 2000 provides. America 2000 is not a standards and testing-only strategy, a new schools strategy, or a choice-only strategy. Instead, it is a broad-based strategy that depends on the cooperation of the governors, the chief state school officers, and communities in meeting all six of its goals. America 2000 is also grounded at the state and community level, because that is where ownership for educational reform has to take place.

I believe there is a much broader understanding today about the environment than there is about education in this country. A Gallup poll taken at the end of the Gulf War in the Spring of 1991, revealed that education was the public's number one priority, ahead of national security. Yet 80 percent of the people who answered that poll rated their own schools, A or B. In other words, people were not taking ownership for this issue; in their minds, the problem always belonged to someone else. Until real ownership takes place, the chance for systemic reform and restructuring is low.

Our strategy for reforming education in this country is no different than our strategy for changing attitudes about the environment; both need to take place at the grassroots level. The public may, in fact, already be ahead of its leaders in thinking about the importance of education. This kind of public involvement represents a real political opportunity to excite the nation about the environment and tie it into the America 2000 goals for reform and restructuring.

Our kids care about the environment and kids learn about the things that they care about. Most educators are telling us that the method of lecturing and regurgitating information is not an effective way to learn. Teaching about our environment through hands on, real world-oriented activities, not just in science but in all disciplines, can provide tremendous motivation for students and teachers. People often ask if we should have separate courses on the environment. I don't know the answer. That question is for all of you to consider. I would, however, place a higher priority on infusing the environment into existing science curricula so that it becomes part of a whole set of other skills and concepts that youngsters are learning.

America 2000 has several tracks: Track 1 is better and more accountable schools; Track 2 is new schools; Track 3 is a more literate public; but Track 4, which involves improving the learning environment outside of school, may be the most important. In an address in April 1991, President

Bush borrowed the phrase, "the 91 percent factor," which may have been invented by Checker Finn, the education writer. This is the simple idea that if a youngster starts school at age 5 and graduates high school at 18, he or she will have spent only 9 percent of his or her time in school. The environment outside of the classroom, however, has a major impact on a student's ability to learn.

We need to go into the communities and the states, and challenge them to adopt the America 2000 goals. Thirty states already have signed on as America 2000 states and a number of communities have also joined. What do you have to do to become an America 2000 school or community?

- Adopt the six national goals (see Appendix K), to which some states have added one or two of their own, and communicate them broadly.
- Develop a community strategy to achieve those goals by the year 2000.
- Report to the community on the content of the strategy and then report regularly on the strategy's progress.
- Agree as a community to plan and adopt a new American school for the next century.

Implementation of a community strategy, such as the one called for in America 2000, requires the involvement of five groups: 1) educators; 2) business leaders; 3) politicians, including school boards (few school boards across the nation are involved in systemic change to develop a first-class internationally competitive school system); 4) community-based organizations, which often know the most about the 91 percent factor; and 5) parents.

The agenda for this conference is tied specifically to developing a strategy of ownership at the local and community level to improve environmental education. I believe that you will begin to see a receptivity at the local level, as communities look for ways to restructure and energize their school system. The environment and environmental education provide an excellent opportunity to achieve those changes.

I would like to leave you with one last challenge. Many of you are part of our higher education system, which is world class. Our universities are playing a leadership role, often in partnership with business and government, in the areas of biology, biotechnology, optics, and semiconductors to ensure this country's international competitiveness. I do not, however, currently see the university community playing a leadership role in the reform and restructuring of the educational system in this country. I would challenge those of you in the educational community to be part of this drive for change.

Our country should have the highest expectation levels for success in education and the environment. Over the last 25 years, we have tended to moderate many of our expectation levels. If we start to raise these levels, I believe we can continue to live the American Dream, which is a simple one—that our children will live better than their parents. If we don't hurry, our children may be the first generation of Americans who, in fact, will not live better than their parents did.

Environmental Education at the U.S. Department of the Interior

by

Manuel Lujan, Jr., Secretary, U.S. Department of the Interior

Environmental education and the protection of our environment are two very high priorities at the Department of the Interior. As steward of some 440 million acres of our nation's lands, Interior is charged with implementing a land management policy that combines both development and preservation. We have made great progress in recent years in promoting public awareness of the environment, and in incorporating environmental concerns into our land management and restoration programs.

One of these programs is called the "Suitcase for Survival." This is a cooperative effort of the U.S. Fish and Wildlife Service, the National Fish and Wildlife Foundation, the World Wildlife Fund, the American Association of Zoological Parks and Aquariums, and Interior's Take Pride in America. The purpose of "Suitcase for Survival" is to show young people in schools or when they visit zoos the importance of preserving endangered species. The traveling suitcases, donated by American Tourister, contain wildlife products confiscated by federal agents, as well as slides and other items to educate students about threatened and endangered wildlife.

Our Water Resources Education Initiative, another program, is a 3-year partnership effort, begun in 1990, with the American Water Resources Association, three Interior bureaus, and the Denver-area public schools. A national team of educators has been assembled to evaluate existing water education materials to determine what materials are most useful and what is lacking. In all, five educational posters will be designed, the first of which has already been published by the National Science Teachers Association in their May editions of *Science Scope* and *Science and Children*.

Another program is the Junior Duck Stamp program. The Federal Junior Duck Stamp Design Contest encourages children in grades K-12 to produce and submit their own wildlife art work for judging. Another component of the program promotes conservation awareness with instructional materials and guidelines for student activities.

The Enjoy Outdoors America initiative focuses on educating the public about the outdoor environment; the plants, animals, geology, and cultural heritage of our country; and what must be done to help preserve these treasures for future generations. Establishing partnerships with local, state, and national constituency groups and governments and encouraging volunteerism are integral parts of Enjoy Outdoors America.

Our Minerals Management Service has produced educational material on topics such as Ensuring Safety on the Outer Continental Shelf and Oil-Spill Prevention and Research.

The Office of Surface Mining has a project to develop publications and video presentations on the contributions of earth science to environmental reclamation.

The U.S. Geological Survey has a wealth of materials pertaining to mapping and geographical research. Their high-tech Geographic Information System (GIS) utilizes data compiled from aerial surveillance, satellite observations, and other geographic sources to produce a variety of maps on the environment. From showing caribou migration in Alaska, to delineating wetlands, to revealing classes of vegetative cover across the landscape, GIS can create maps that tell a thousand stories about our environment.

The Bureau of Mines plans to develop materials to support a minerals curriculum that will help students discover the nature of mineral resources and their importance in society.

The Bureau of Land Management (BLM) is launching a major new heritage education program in support of the President's "America 2000" goals. This program will ultimately provide learning opportunities for students, both in school and in "outdoor classrooms" and museums. BLM's five million historic and archaeological properties provide a dramatic record of 12,000 years of human presence in the New World. They offer unparalleled opportunities to teach young people about America's cultural heritage.

The BLM's "Watchable Wildlife" program is designed to increase opportunities for visitors to the public lands to photograph, study, or simply watch the countless mammals, birds, fish, reptiles, amphibians, and invertebrates that live there.

In a particularly important program, "Leave No Trace," the BLM has recently joined forces with the National Park Service and the Forest Service to broaden public awareness of wilderness ethics. Through posters and brochures, the "Leave No Trace" program teaches those who camp on public lands the proper ways of preserving the wilderness areas they visit, so that these areas are left in pristine and undisturbed condition for all to enjoy.

Interior's Bureau of Reclamation is behind an effort to spread project WET, "Water Education for Teachers," nationwide. Teachers are eager to include water education in their classes, but often lack the financial resources needed for materials and training. Project WET meets the needs of these teachers through seminars and workshops. WET has been highly successful in North Dakota, Montana, and Idaho.

When it comes to environmental education, the National Park system is perhaps the Interior Department's strongest suit. The National Park Service has a long and respected history of environmental education programs, much of which has been in the form of traditional interpretive programs in parks such as guided walks, evening programs, exhibits, and audiovisual presentations. Our nation's parks are schools in themselves, offering a countless variety of natural and historical lessons to the millions of people who visit them. The "National Parks as Classroom" program is the Park Service's current effort to maximize its educational impact, by encouraging partnerships and cooperative efforts with local communities, local schools, and colleges and universities. As more funding becomes available, this program will expand and develop additional activities.

In summary, we have a wide variety of efforts underway at the Department of the Interior to foster environmental education. We at the department, however, are looking forward to meeting the continuing challenge to provide more environmental education programs. In order to make the best use of our vast resources, we are eager to develop partnerships, to share ideas and information, and to collaborate in joint projects whenever possible. Protecting and preserving the environment is everyone's business. Americans realize that a sound environmental policy requires a commitment to long-term goals, and they realize that the health of our environment is a concern not just for themselves, but for their children and future generations as well. The Department of the Interior stands ready to do its part to attain these goals.

Peace Corps - A Leader in Environmental Education

by

Barbara Zartman, Deputy Director,
Peace Corps

This conference is a symbol of renewed national commitment to environmental education and a real opportunity for all of us—in the public and private sectors—to link together, strengthen our collaborative activities, and work more effectively to solve environmental problems through education. Margaret Mead once advised: "Never doubt that a small group of committed citizens can change the world. Indeed, it's the only thing that ever has."

For 30 years, the volunteers of the Peace Corps have proven that committed people can make a difference. When it comes to protecting our world's environment, this commitment is needed as never before. And make no mistake—the challenge before us is a global challenge.

In every corner of the world, people are cutting forests, extracting minerals and energy sources, eroding topsoil, polluting the air and water, and destroying natural areas at an unprecedented rate. As the pressures from overpopulation and overdevelopment increase, it is becoming increasingly difficult for the world's people to provide for their needs and wants.

The consequences of severe environmental degradation are inescapable: loss of human life, increasing cancer rates, species extinction, spreading deserts, pesticide contamination, starvation, and poverty. Many experts fear that if the current rate of destruction continues, we may well see the gradual breakdown of the very systems that support life on earth.

Those of us involved in environmental education understand the link between the degradation of the world's natural resources and growing food shortages, poor health, and inadequate nutrition in developing countries. We understand the profound truth within the Kenyan proverb: "Treat the earth well. It was not given to you by your parents; it is loaned to you by your children." We also understand the link between environmental degradation and environmental education.

At the Peace Corps, environmental education is our commitment to the future. We believe that environmental education can help people gain the knowledge, skills, motivation, and commitment they will need to manage and sustain the earth's resources, and to help them take responsibility for maintaining environmental quality. By empowering and enlightening, environmental education can help people solve and prevent environmental problems. That is as true in Delmarva as it is in Dakar.

Since its founding in 1961, the Peace Corps has recruited, trained, and placed environment and education volunteers in more than 100 countries around the world. And the roster of Peace Corps countries is increasing more rapidly now than at any time in the agency's history. We now have volunteers serving concurrently in nearly 90 countries; we are also receiving invitations from new countries at an unprecedented rate. Before us are new programs in Argentina, Albania, Ukraine, the Baltics, and other former Soviet republics as they are recognized. In addition, there are a dozen countries in this hemisphere and in Africa inviting the Peace Corps to come and join with them. Increasingly, environmental programs are part of what we share.

Today we have environmental programs underway in more than 60 countries, accounting for more than 700 volunteers, probably the largest environmental work force in the world. This fiscal year, host country governments have asked the Peace Corps to provide more than 550 pure environmentalists. In the "formal" environmental sector, volunteers are incorporating environmental issues and content into their teaching in all subject areas, developing environmental education curricula for primary and secondary schools, teaching college-level environmental education courses, and training teachers in environmental education techniques.

On the Caribbean island nation of St. Kitts, for example, volunteers and their counterparts developed an environmental education component for the national curriculum, and they are currently in the process of creating a long-range plan that will involve writing workshops, teacher training, and evaluation.

We've also conducted teacher-training workshops for both Peace Corps volunteers working as elementary and secondary educators, and their host country counterparts, in such widely varied places as Gabon, Sri Lanka, Botswana, the South Pacific, and Central Europe. During these training programs, participants focus on how to identify environmental problems in their communities and how to incorporate environmental issues into their teaching. Overall, education volunteers comprise almost 40 percent of all Peace Corps volunteers, which translates to more than 2,800 education volunteers working today in almost every Peace Corps country. With the collaboration of the U.S. Environmental Protection Agency (EPA), we are providing training to all of those volunteers so that they may become truly a worldwide environmental education workforce.

The Peace Corps recognizes that without the cooperation of our colleagues we could not accomplish a fraction of what we do now. The Peace Corps currently collaborates with a number of the world's leading organizations and agencies active in the environmental field, many of which are represented at this conference. We recognize that the Peace Corps cannot stand alone or work in isolation in international environmental education and natural resource management. Our collaborations enhance our capacity to promote global education and awareness of environmental problems.

As we look ahead to the year 2000, our goal will be to increase the environmental awareness, knowledge, and skills of all Peace Corps volunteers and staff regardless of their field of service, as well as to support our operational projects overseas. In partnership with EPA, we will be developing for all volunteers a pre-service training module focusing on the environment that will include sessions on identifying environmental problems, investigating attitudes and perceptions, and developing secondary projects that can help address environmental problems. These volunteers will serve their two years overseas and then return to join our national workforce, at the rate of 3,000 or 4,000 a year, as internationally aware, bilingual, culturally sensitive, environmental educators. Thus, as we grow to our mandated level of 10,000 Peace Corps volunteers, the environmental education workforce will grow, too.

As the Peace Corps continues to support environmental programs overseas and develop new program directions, we will be counting on our collaborative agreements more than ever before.

Currently, 37 environmental volunteers are taking part in pre-service training in Hungary, Czechoslovakia, and Poland, with assistance from the Regional Environmental Center in Budapest, the EPA, the Institute for Conservation Leadership, the World Wildlife Fund, and local experts in each country. These volunteers will be working in environmental education centers, parks, and environmental nongovernmental organizations throughout the region. In November 1991 in Sri Lanka, more than 60 volunteers and their counterparts attended a workshop designed to help them incorporate environmental education into their teaching, using environmental education models such as Project Learning Tree and NatureScope.

In addition, the Peace Corps has, in the last year and a half, introduced a domestic education component that links American classrooms with volunteers overseas. Our World Wise Schools program establishes an exchange between enrolled elementary or secondary school classrooms and active Peace Corps volunteers who agree to share, through letter and artifact exchanges, information about what they are doing in the field. Some 2,500 stateside teachers have enrolled their classes in this program as Peace Corps World Wise Schools.

The Peace Corps has always been a dynamic agency and as we look to the turn of the century, we see that this will not change. As an agency, we will be challenged as never before to meet the needs of the countries we serve. We believe that people can successfully address the environmental issues facing the world and help improve the quality of their lives—if given the necessary tools, opportunities, and support.

As we look to the future and the role that environmental education will play, I would like you to consider the words of Oren Lyons, faithkeeper of the Turtle Clan of the Onondaga Nation:

> In our way of life, in our government, with every decision we make, we always keep in mind the Seventh Generation to come. It's our job to see that the people coming ahead, the generations still unborn, have a world no worse than ours—and hopefully better. When we walk upon Mother Earth, we always plant our feet carefully because we know the faces of our future generations are looking up at us from beneath the ground. We never forget them.[1]

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[1] Wall, S. and H. Arden. The Wisdom Keepers: Meetings with Native American Spiritual Elders. Hillsboro, OR: Beyond Words Publishing, Inc.

A Vision for Environmental Education

by

Gaylord Nelson, Counselor, The Wilderness Society

As a society, we devote much of our time and energy to addressing events and issues of immediate concern: the economy, jobs, wars, budget deficits, drugs, crime on the streets, the worldwide unravelling of communist systems, and many more. These are front page issues that will always command our attention. But, strangely, an issue of immeasurably greater import than any of these draws comparatively scant attention. Right now, and in the long haul into the next century and the centuries thereafter, no other issue is as relevant to the condition of human life as the status of our resource base. This resource base defines the habitat and the limitations for survival of all species, plant and animal, including humankind. In comparison, all other issues are relatively insignificant.

My remarks will be confined mainly to the political aspects of the issue, because it is in the arena of politics, where we will succeed or fail to meet the environmental challenge so critical to our future.

The first and most important political and economic reality is that all industrial nations are rapidly degrading and dissipating their life-sustaining resource base. In short, every industrial nation is consuming its capital assets—its wealth—and counting it on the profit side of the ledger. The basic wealth of a nation is its air, water, soil, forests, minerals, rivers, lakes, oceans, scenic beauty, and wildlife habitats. Take it away and all that's left is a desert.

Perhaps the most sacred tenet of capitalism is that you do not consume capital to pay for current expenses. Yet, unwittingly, or perhaps, witlessly, the captains of industry and the free market entrepreneurs have been depleting the nation's capital resource base for so long they are unaware that they are sowing the seeds that will destroy the system. Every business enterprise in history that consumed its capital and called it profit went bankrupt. Sovereign nations are no different—it will just take them longer to get there.

In the past century, the industrial world has destroyed or degraded a great portion of the capital accumulation on earth by air, river, lake, and ocean pollution; soil erosion; depletion of aquifers; overdrafting ocean resources; deforestation; and destruction of wildlife habitats and scenic beauty. If we are going to stop dissipating this resource base, which certainly we must, then three important things must happen during the next 30 to 40 years:

1. Bring together a unified political coalition behind an environmental program to create a sustainable economy.
2. Implement a long-term nationwide environmental education effort aimed at nurturing a conservation generation.
3. Vigorous, Presidential leadership supported by the Congress.

We must begin by developing a carefully designed long-term economic-environmental program with the objective of creating an environmentally sustainable economy—that is to say, an economy that is not fueled by consuming our capital, but one that is sustained by living off the interest. Everything that needs to be done to create a sustainable economy is well within our capacity. The only question is whether we have the vision to recognize the necessity of acting soon and the national will and political leadership to implement such a long-range program.

To achieve this goal, we must nurture a "conservation generation" imbued in its heart and mind with a strong conservation ethic that serves to guide its conduct respecting all matters relating to nature and its works. That is to say, an ethic that guides its daily personal conduct and its conduct as leaders and decision-makers in both the private and public sectors. The marketplace plus laws, rules, regulations, and the courts are important but can only do part of the job. The rest is up to "we, the people." The distinguished English Jurist, Lord Moulton, went to the heart of the matter when he said, "The measure of a civilization is the degree of its obedience to the unenforceable."

A deeply ingrained conservation ethic will produce a high degree of obedience because it is self enforcing. It can do what laws, rules, courts, and police officers cannot. Absent a conservation ethic deeply ingrained in our culture, we will continue in the future, as we have in the past, to destroy enduring national values in exchange for a handful of silver and a mortgage on the future.

When experts are asked to list the most serious environmental problems, they are practically unanimous in ranking at the top of the list the calamitous consequences of continued exponential population growth. Even by the most optimistic scenarios, world population will increase by 95 million every year during this decade adding a net of 1 billion to the current world population of 5.3 billion. To give some perspective on this exponential growth, when I was born in 1916 there were 1.7 billion people on earth; when I organized Earth Day in 1969 and 1970, there were 3.7 billion; last year there were 5.3 billion; and we're headed by the turn of the century to 6.3 billion.

Does anyone really believe this world will be a better place with a billion more people 10 years from now, and will be better still when world population doubles in a few more decades, that the United States will be a better country with 100 or 200 million more people, or that New York, Miami, Chicago, Detroit, and Los Angeles are better cities now than when they were half the size and will be better still when half again as large? The answer to these questions is obvious. Indeed the population of the United States already exceeds its carrying capacity—that is to say our current population is being sustained by continued erosion of our resource base. This is not a sustainable situation over the long term; it is the road to bankruptcy. It is irrational to continue to travel that road when forging an alternative is feasible.

When we find educated and distinguished citizens like Professor Julian Simon and Ben Wattenberg arguing that population isn't a problem, that more is better, a closer examination inevitably reveals that they are economists. No biologist or ecologist would make that argument.

Mainstream economists think the health of the economy and the wealth of the nation are measured by the simplistic exercise of adding up the annual production of goods and services without factoring in the accumulated environmental deficit or the annual cost of environmental deterioration. Whereas the economics profession should be at the cutting edge of the drive to forge a sustainable economy, it is instead an intellectual and political impediment to the process. Thus, except for a relatively small number of economists like John Daly (author of For the Common Good), the profession has made itself irrelevant to the central issue of our time. The extent of its irrelevancy was aptly put by Amory Lovins when he said, "Economists are those people who lie awake nights worrying about whether what actually works in the real world could conceivably work in theory."

After population, the experts list such vital matters as the threat of global warming, pollution of the oceans, declining biodiversity, ground-water pollution, hazardous wastes, and many more. All of these issues would rank high on any list. Ironically, however, possibly the single most important long-term environmental issue is rarely noted or mentioned anywhere. Yet it most certainly is the key to our environmental future. The absence of a pervasive, guiding conservation ethic in our culture is the issue and the problem. It is a crippling, if not a fatal weakness. Society's answer must be to focus its attention and energies on nurturing a conservation generation imbued with a conservation ethic. Without such a guiding ethic, society will not have the understanding, motivation, conviction, or political will to persist in addressing the truly hard questions that will confront us in the decades to come.

Tragically, the universal guiding ethic of the United States and all other industrial nations since the industrial revolution has been maximum exploitation of all resources with minimum concern for the consequences to the environment. This guiding ethic has been quite precisely described by a Japanese journalist who was asked by ecologist Paul Ehrlich why the Japanese whaling industry is busily exterminating the very source of its wealth. The answer:

> You are thinking of the whaling industry as an organization interested in maintaining whales. Actually, it is better viewed as a huge quantity of capital attempting to earn the highest possible return. If it can exterminate whales in 10 years and make a 15 percent profit, but could make 10 percent with a sustainable harvest, then it will exterminate them in 10 years. After that, the money will be moved to exterminate another resource.

Economist Herman Daly cogently summarized this evolving tragedy when he said, "...there is something fundamentally wrong in treating the earth as if it were a business in liquidation." Nonetheless, that fairly describes our stewardship of the planet.

Alfred Wood Krutch described the guiding cultural ethic of the industrial society with some biting satire: "When someone destroys something replaceable made by mankind, he is called a vandal. When someone destroys something irreplaceable made by God he is called a developer."

Had our society been guided by a conservation ethic, we would not have fallen into an endless number of avoidable costly environmental blunders. Fortunately, there are encouraging signs that our society is beginning to develop a conservation ethic that will ultimately flower into a powerful social, political, and economic force. The sooner the better. A committed conservation generation is crucial to the political process through which we will do or fail to do what is necessary to forge an environmentally sustainable economy in the next three or four decades.

If we are going to succeed in raising a conservation generation soon enough to have a significant impact in the near term, we must initiate a comprehensive nationwide environmental education program in every school system in America. The governor of every state should have at the top of his or her agenda a proposal mandating that environmental education be included in the curriculum for every class from kindergarten through high school. The state of Wisconsin has implemented such a program in kindergarten through twelfth grade. In 1985, the state of Wisconsin mandated that no one would be certified to teach in the state without qualifying in a certain number of environmental courses. Teachers in the arts, economics, agriculture, and other courses must infuse into their classes an environmental element. The interesting thing about this program is that it did not require a tax increase. Wisconsin spends about $200,000 on this program out of a $14 billion budget. If every state would follow Wisconsin's lead we would dramatically speed up the process.

Not only has Wisconsin mandated K-12 environmental education but last year Tufts University became the first university to require that courses in all academic disciplines, both graduate and undergraduate, include an environmental aspect.

A well-designed environmental education program will produce an informed and committed conservation generation that will provide the critical understanding and support for moving the nation to a sustainable economy.

I would like to comment briefly on Earth Day and its environmental education aspect. My purpose in organizing the 1970 Earth Day event was both political and educational. The first objective was to get a nationwide demonstration so large it would shake the political establishment out of its lethargy and, finally, force this issue permanently into the political arena. The second objective was to institutionalize Earth Day as an annual educational event in our grade schools, high schools, colleges, and local communities. Every year for the past 21 years increasing numbers of schools and communities have observed Earth Day, reaching a total of several thousand in 1991. In our school systems and communities, self-generated Earth Day observances have been expanding every year since 1970.

On November 19, 1969, 5 months before Earth Day, I introduced the Environmental Education Act which was signed by the President 11 months later on October 30, 1970. Unfortunately the program was allowed to expire in the early 1980s. Last year Senator Burdick was able to revive the Act with some modifications, and EPA is conscientiously carrying out the mandates of the law. For example, for the 11- or 12-year period the law was in effect the first time it was adopted, there wasn't any conference like this one.

We have come a long way in the past 20 years, with the general public and all social, political, cultural, economic, and religious groups finally recognizing and responding to environmental concerns—not as fast as one might hope but clearly at an accelerating pace. My hope is that we will all soon recognize that environmental education goes directly to the heart of the challenge to create a sustainable economy. Quite frankly, it ranks as a priority of the first order.

Goals and Priorities in Implementing the National Environmental Education Act (NEEA)

by

Lewis Crampton, Associate Administrator for Communications,
Education, and Public Affairs, U.S. Environmental Protection Agency

President Bush signed the National Environmental Education Act into law in November 1990, but Administrator William Reilly had already established the Office of Environmental Education (OEE) in August of that year in anticipation of the Act's passage. We at EPA were confident that an idea as powerful as this one would have the support of Congress.

During the course of writing this law, EPA had excellent relationships with Senator Burdick and Senator Chaffee, the Majority and Minority Leaders, respectively, of the Senate Public Works and Environment Committee. Staff members Jeff Peterson, who works for Senator Burdick, and Rich Inness, who works for Senator Chaffee, were instrumental in supporting the Act.

The Office of Environmental Education and the National Environmental Education and Training Foundation have been working for the past year to develop the infrastructure to implement this law. One year after its passage, we are carrying out one of the main objectives of the legislation by creating linkages and partnerships, and developing positive working relationships with other agencies, with businesses, and with schools and universities. Environmental education is a wonderful opportunity for EPA to get more in touch with its own goals. Ten EPA headquarters staff in the Office of Environmental Education will work to carry out these mandates, and each of the 10 EPA regional offices has selected a staff coordinator for environmental education.

Michael O'Reilly has brought to the position of Acting Director of the Office of Environmental Education enthusiasm, vision, a willingness to reach out and listen, and an ability to develop teamwork that has contributed greatly to OEE's success. The following is a brief status report on each of the programs and mandates of the Act that EPA is implementing:

- Environmental Education Clearinghouse - The clearinghouse will provide information on federal agency and nonprofit organization environmental education materials and programs to existing information-sharing networks, tailored especially for teachers. Our goal is not to include all environmental education materials developed by EPA and other federal agencies, but to select quality curricula and interpretive programs. We will be establishing selection criteria and would appreciate your input. The architecture of the clearinghouse is simple, accessible, and interactive. Michael Baker, Mike Torrusio, and Richard Laska are responsible for the clearinghouse.

- Internship and Fellowship Programs - The Act calls for internships for 250 college students and fellowships for 50 in-service teachers, with the goal of promoting the understanding of environmental issues and improving the training of environmental professionals. The first interns and fellows will be placed federal government-wide in the fall of 1992. Our internship/fellowship program will have two tracks: 1) experience-based internships and fellowships in which individuals at EPA and other federal agencies will serve as mentors to help students and teachers participate in the activities of their assigned agency, and 2) research-based fellowships, which will provide graduate students with a project, paper, or investigation to pursue in support of an EPA office. Ginger Wandless and Melba Meador are responsible for the Internship and Fellowship Programs.

- Youth Programs - These programs already include formalized relationships with the Boy Scouts and the Girl Scouts of America, and, we hope, will expand to include other organizations like the Future Farmers of America. Our largest youth program is the President's Environmental Youth Awards. President Bush presents these awards personally to 10 outstanding youths every year. The person in charge of the Youth Programs is Doris Gillispie.

- Advisory Boards - Our first advisory mechanism is EPA's internal 36-member Advisory Board representing all of the regions, headquarters programs, and research laboratories. The chair of that board is Paul Keough, Deputy Regional Administrator, Region 1. We also have a 16-member interagency Federal Task Force on Environmental Education; that is the group responsible for sponsoring this conference. In addition, we have an 11-member Advisory Council, who will formally advise EPA on how it implements its new environmental education programs. It is made up of educators, states, non-profit organizations, and the private sector. Mike Baker manages the internal EPA Advisory Board and Kathleen MacKinnon manages the Federal Task Force and Advisory Council.

- Grant Programs - EPA is developing two grant programs to support selected environmental education efforts, for which Congress has appropriated 4.1 million dollars for fiscal year 1992. The two programs are:

    1. Training and Education Program. This program awards a grant to a university or nonprofit institution or consortia of institutions to operate an environmental education training program. The institution or consortia can use the grant to develop curricula or training courses for teachers, or to pursue other environmental education activities. We received 80 preproposals, of which EPA staff have selected the 10 best. The top 10 proposals will be reviewed by a federal government panel as well as by nonfederal environmental education peer review experts. A final selection will be made in the spring of 1992.

    2. Education Grants. These grants are being awarded on an annual basis to support local, state, and nonprofit environmental education efforts. The presolicitation notice was distributed to 10,000 people on our grants program mailing list, and the final solicitation notice was published in the *Federal Register* in late November 1991. Over two million dollars is available for this program, half of which will be available directly to the Regional Administrators and the directors of the laboratories around the country. (Each region will get approximately $100,000.) The regions will set up

grants review procedures and make decisions on all proposals that are less than $25,000. Headquarters will award grants of over $25,000. Our strategy, because we are not yet at full funding and because there is a lot of demand, is to make as many good small grants as possible. Having worked at the local level before, I know how important even a small grant can be in establishing support and credibility for a program. The first grants for this program will be made in summer 1992. George Walker is heading up the Grant Programs.

- EPA *Earth Notes* - The Office of Environmental Education is launching a periodical that contains material from elementary classroom teachers about their first-hand experiences in bringing environmental education into the classroom. The first edition was distributed in November 1991 to 100,000 educators nationwide. The person responsible for *Earth Notes* is Lois Haig.
- International Environmental Education. EPA has established an excellent working relationship with the State Department, AID, and the United States Information Agency (USIA) in pursuing international activities. We have been broadcasting environmental programs to countries around the world using the USIA broadcast network. In cooperation with the Office of the Deputy Administrator and the Office of International Activities, we have also been developing a trilateral agreement in environmental education with Canada and Mexico. The lead staff person in this area is Lois Haig.

This summarizes the activities of the Office of Environmental Education in implementing the mandates of the National Environmental Education Act. We hope that you will share any questions or ideas that you may have on any of EPA's efforts with myself and with the OEE staff responsible for these programs.

The National Environmental Education and Training Foundation

by

Robert L. Herbst, Chairman
Interim Board of Trustees, The National
Environmental Education and Training Foundation

My renewed call to you today is from the banks of the rivers, the tops of the mountains, the bottoms of the valleys, and the secret places throughout our nation's vast land and water areas. I call on you to recognize the value and the need for your continuous, active, and creative involvement in the care, wise use, and enhancement of our environment. And I call on you to share your knowledge with others, and to be environmental leaders by your words, deeds, and actions.

In 1855 on the Banks of Puget Sound in the state of Washington, Chief Seattle wrote in a letter to President Franklin Pierce:

> We know that the white man does not understand our ways. One portion of the land is the same to him as the rest, for he is a stranger who comes in the night and takes from the land whatever he needs. The Earth is not his brother but his enemy, and when he has conquered it, he moves on. He leaves his fathers' graves, and his children's birthright forgotten. There is no quiet place in the white man's cities. No place to hear the leaves of spring or the rustle of insect wings, but perhaps because I am savage and do not understand, the clatter only seems to insult the ears. And what is there to live for if a man cannot hear the lovely cry of the whippoorwill or the arguments of the frogs around the pond at night ... When the buffalo are all slaughtered and the wild horses all tamed, the secret corners of the forest heavy with the scent of many men, and the view of the ripe hills blotted by talking wires? Where is the thicket? Where is the eagle? GONE! And what is it to say goodbye to the swift and the hunt? The end of living and the beginning of survival.

This was a powerful and articulate indictment of the overdevelopment mentality that accompanied the westward expansion in this nation, the scars and ruins of which are still the subject of protracted debate and controversy. The basic issue remains unchanged: how best to protect and conserve that which remains. The major difference, however, is that which remains is a whole lot less now than it was back then—each mistake today is much more costly.

Regrettably, the kind of environmentally insensitive, uncaring, and unthinking attitude that caused Chief Seattle to rise in poetic rage remains very much with us today. But there always has been present in America a strong underlying conservation ethic, a desire to understand the interrelationship of people and earth, and a desire to set aside, protect and conserve our natural heritage for our own use and for future generations.

I like to think that the environmental ethic is gaining strength in America today, that people are beginning, at long last, to understand how the quality of their own lives and those of their children is diminished by dirty water, dirty air, denuded forests, and even the filling of a marsh for yet another shopping center. There is a growing appreciation for the thicket, and all the creatures that abound there. I believe environmental education and experiences have contributed to the better understanding of our surroundings.

Our natural phenomena have defined our history. Even today, the canyons, rivers, mountains, and open space virtually cry out—"This is your land; this is America—a variety and abundance of natural resources that belong not only to this generation but to future generations as well." These are lands that belong to us all—to rich and poor and those of us in between, wherever we live, whatever we do.

In addition to our people, it is our land- and waterbase that have made America unique on this globe and have made us strong and a world leader. It has not been our military strength, historically, though that has been immense. It has not been our rapid industrial and technological development, though that, too, has been immense. It is our land that has lifted us up among nations. Our land that has produced food, fiber, and other resources in unequalled quantity and quality for ourselves and others. It has been our land that has stood in silent and majestic beauty where fish and wildlife, and other resources, have flourished for all. Despoil that land and you have despoiled the physical essence of America. We have a responsibility not to let that happen.

The environmental problems of our nation and planet are immense. But within your individual and collective knowledge, ideas, habits, and action is the power to cleanse and maintain this planet. The key to this individual and collective power is environmental education. In my mind, the "ticket" to our nation's best opportunity to support environmental education is the passage of the new National Environmental Education Act, and the creation of the National Environmental Education and Training Foundation.

The National Environmental Education and Training Foundation is a unique public/private partnership created to foster a global environmental ethic through the powerful tools of education and training. The Foundation is committed to the joint goals of environmental protection and sustainable development. Its vision is a commitment to meet the needs of the present while ensuring the ability of future generations to meet their needs. To that end, the Foundation is uniquely suited, in both form and function.

- **In form, the Foundation is both public and private.** Publicly chartered by the Congress of the United States under the National Environmental Education Act of 1990, it is also privately incorporated as a 501(c)(3) charitable foundation. The Foundation is governed by a private sector Board of Directors comprising national and international champions of the environment, the economy, and education. The board is appointed by the Administrator of the U.S. Environmental Protection Agency for terms of up to 4 years. Funding for the Foundation is also both private and public. In addition to government grants and corporate and individual contributions, the Foundation receives Congressional appropriations.

- **In function, the Foundation provides a neutral common ground** for all interested parties to join forces and resources—both financial and intellectual—in support of environmental and economic sustainability.

As a public/private partnership, the Foundation provides the common ground on which business and industry; state, local, and federal governments; public advocacy and interest groups; nonprofit service organizations; philanthropics; and individuals can combine their respective resources, both financial and intellectual, to build an environmentally safe and economically sound future. The Foundation will provide grants and contracts for environmental education and for training. The Foundation will support the development, implementation, evaluation, and national and international replication of programs and projects determined to have the best chance of "making a difference" at the personal as well as the institutional level, in protecting the environment and sustaining our economic development.

The Foundation's goals are to:

- Provide a national and international focal point for information about, and access to, environmental education and training opportunities.
- Bring national and international recognition to the actions of individuals and institutions.
- Expand the reach of environmental education programs and projects beyond the traditional classroom.
- Increase substantially the numbers and the qualifications of environmental management professionals.
- Increase substantially both the quantity and the quality of environmental education programs, projects, and materials.
- Support and build upon the ongoing work of public, private, and nonprofit groups already involved in pursuing these goals.
- Recognize, involve, and support traditionally underrepresented or disenfranchised populations.
- Encourage education and training programs focused on such critical issues as the environmental health of urban and rural populations.
- Provide scholarships and fellowships to deserving students committed to pursuing research projects or careers in environment-related areas.

The Foundation, although it has not yet received an appropriation from Congress, now has a board; the support of federal departments with an ex-officio board, consisting mainly of the deputy secretaries of these departments; a chairman, Governor Kean of New Jersey; a staff; offices;

beginning funding; and all draft plans and criteria ready for full implementation. The bottom line is that this is your Foundation, a tool for you to pursue the expansion of environmental education. Quoting from the Act itself, "It is the policy of the United States to establish and support a program of education on the environment." The Foundation will be your vehicle to implement this policy.

As EPA Administrator William K. Reilly said last year:

> In the end, environmental education boils down to a simple yet profoundly important imperative: preparing ourselves for life and all its surprises in the next century. When the 21st century rolls around, it will not be enough for a few specialists to know what is going on while the rest of us wander around in ignorance.

I fully agree with this assessment, but I also believe that without a comprehensive program of environmental education, we may really be facing the end of life as we know it; or as we know it can be. In conclusion, I would like to share with you my favorite definition of stewardship, as written by Robert Hatch:

> 'The Earth is the Lord's,' sayest the psalmist, 'And all that therein is.' The trackless forests, the rivers that wind across this continent, the marshlands, the prairies, and the deserts, all were made by Him. Man did not create the riches that are spread before him. All of these have been loaned to him as a trust. None of it really belongs to him. His days are as grass, and when the span of his life is over, he is the owner of nothing on earth.
>
> For a time he is called upon to be the steward of the riches of the Earth. He is given dominion over the works of his Creator. But such dominion is a frightening responsibility. One look at a dustbowl, a poisoned stream, or the landscape blackened by fire, shows how grave this responsibility can be. Conservation teaches the principles of wise stewardship. It counsels foresight in place of selfishness, vision in place of greed, reverence in place of destructiveness. Conservation involves concern for other generations. It sees beyond the immediate and the temporary. It takes into consideration not only our generation but future generations as well. It recognizes the rights of people who are not yet born, citizens who will inherit this land a thousand years from now. It reminds us that they too have a right to enjoy what we enjoy, to profit by the same things, to be inspired by them as we are inspired, and to love them as we love them today. Conservation is designed to preserve the riches of the Earth for human happiness and welfare until the end of time.

United Nations Conference on the Environment and Development

by

Andrew Wolf, Special Assistant to the Director,
United Nations Environment Programme, North America Regional Office

During the 20 years since the Stockholm Convention, which created the United Nations Environment Programme (UNEP), the United Nations has become a focal point for the idea that the world has no boundaries when it comes to environmental protection and environmental awareness. We are confronting these issues as never before in the history of the United Nations as the world looks to this institution as a world parliament and, we hope, as a proactive instrument of change.

When we consider Mount Pinatubo's effect on Los Angeles' environment and climate, the Love Canal, the fires in Kuwait, and the critical situation with Chernobyl, we can no longer look at the world in a regional, political context. Instead, we must realize there are no boundaries when we examine the issues affecting our health and our future as a planet.

I would like to describe an historic if not an unprecedented event in the history of civilization, which will take place on June 1 through 12 in Rio de Janeiro, Brazil. This event is the United Nations Conference on the Environment and Development (UNCED). What makes this conference unique and different than the conference in Stockholm 20 years ago—which was the first focal point for the then little known issue of environmental awareness and protection—is that we have linked the word "development" with environmental quality. This conference will address bringing the developing countries, and the lesser developed countries, up to the level of our own aspirations, as what we in the United States call a developed country.

This event is being called the Earth Summit, because over 150 heads of state and other dignitaries will be representing their nations, along with thousands of representatives of nongovernmental groups and private-sector interests. This 12-day meeting is the largest summit of its kind in history and is an unprecedented attempt to mobilize people to set a new and more hopeful course for the future of humanity. Following are some of the things that will take place:

- The conference is expected to produce an Earth Charter, which will embody basic principles that must govern the economic and environmental behavior of people and nations to ensure our common future.

- The conference also will attempt to achieve Agenda 21—a blueprint for action on all major issues affecting the relationship between the environment and the economy. It will focus on the period up to the year 2000 and extend into the 21st century. This agenda will also provide the means to carry out these activities by making available to developing countries, in particular, the additional financial resources and environmentally sound technologies they require to participate fully in global environmental cooperation and to integrate environmental considerations into development policies and practices. It is expected also to reach an agreement on strengthening institutions globally in order to implement these measures and aspirations.

- Finally, we expect that the heads of state will sign agreements or conventions currently under negotiation that will affect climate change and biological diversity. As should be expected, UNEP is actively involved in supporting the preparatory process. UNEP seeks to heighten public awareness and personal responsibility with a humanistic agenda concerning how to convey these ideas to the participants of UNCED and the world through art, literature, poetry, and other educational and artistic forms.

We are hoping with this conference to meet the expectations of the world, but we are very clear that this is just one step in the long process that commands all of our attention and all of our concern.

I want to encourage you to track the conventions that will be agreed upon in Brazil and to use them in your curriculum, your planning apparatus, and your teaching methodologies. For more information about the activities I have described, contact:

UNCED
Room S 3060
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The Future of Environmental Education

by

James R. Moseley, Assistant Secretary for
Natural Resources and Environment,
U.S. Department of Agriculture

Environmental education is an area where the U.S. Department of Agriculture (USDA) has some expertise. Since the USDA's inception, research in the sciences has served as our foundation, and education has been our guiding light.

In partnership with our land-grant universities, the USDA conducts research, develops technology to support the research, and, ultimately, provides this information for people to apply to their daily lives. Today, American agriculture is unquestioned in terms of its productivity and is the envy of the world.

One of our major responsibilities is helping producers find new ways to increase productivity and feed a hungry world. Now a new and very important dimension has been delivered to the doorstep of USDA. While we have always been aware of the need to conserve resources and of the environmental consequences of our production of food and fiber, this awareness level has risen in recent years. This awareness has stemmed not only from the public's concern for the environment, but also because we are learning more from our research programs about our impact on the environment. As a result of these two factors, the USDA has expanded its emphasis on environment and natural resources management.

Our approach in addressing environmental issues is no different than it has been in solving our agricultural production problems. We rely on our research and education system to help to ensure environmental soundness in all of our programs guiding farmers and ranchers. Most of us have come to understand that over the long haul, we have no other choice. Within every agency in the department, environmental education is a top priority. From the Cooperative Extension Service, which has a major role to play, to the Soil Conservation Service, for which I have responsibility, we have men and women working directly with farmers and ranchers in applying what we have learned from our research efforts.

Looking to the future of environmental education, we need to focus our attention on additional areas if we are to be successful in meeting our education goals. We need to strengthen the educational process with partnerships in government and public policy development. We also need to do a better job of communicating and educating our fellow co-workers about the work we are doing. Strengthening these lines of communication is critical because our paths do cross, we work on many of the same issues, we have similar goals, and, in many cases, we serve the same constituencies.

Something that happened to me a few months ago illustrates the critical nature of communication. The reauthorization of the Clean Water Act in 1992 is an issue of major importance to agriculture because of its potential impact on the industry. To get a better understanding of this issue, I met with a very influential environmental policymaker who plays a major role in the formation of water quality policy.

During our conversation, it became apparent to me that this person had no idea what agriculture or the USDA was doing to improve water quality. I spent 45 minutes explaining the current research technologies producers are utilizing on their farms and ranches to improve water quality. These technologies include site-specific farming, where the inputs are electronically measured and applied based on the specific soil site requirements; that is, farmers only apply what a particular crop needs to produce for that year. I also explained that we are combining satellites, electronics, and computers on field equipment to help us solve our production and environmental problems.

When we finished our discussion, this person openly admitted having had no idea that agriculture was working in such a systematic way to address water quality. The individual had never been on a farm and never had anyone who actually farms explain what American producers are doing to solve our environmental concerns. Consequently, this person had made an assumption that agriculture wasn't doing much about the issue. This story points out the critical need for communication and education among everyone involved in the policy-making process. The work and improvements performed by USDA, EPA, and other federal agencies, as well as farmers and ranchers, will ultimately be less effective if our policy-makers lack a basic level of understanding about what's going on in the field.

In closing, I would like to share a conversation I had last spring with my 13-year-old daughter. One day Bethany came home from school and asked, "Dad, we use pesticides don't we?" I responded, "Yes," to which she then asked, "Why do you do such a terrible thing to our environment?" Needless to say, I was surprised by her question. This is a 13-year-old who lives on a farm in Indiana, who has pulled more than her share of weeds, and who has grown up with livestock, corn, and soybeans as a part of her everyday environment. This is not a child who does not understand where food comes from.

Listening to her, I realized how quickly and easily attitudes form. Her teacher, in whom Bethany places a great amount of trust, told her and her classmates that farmers who use pesticides are destroying our environment. My daughter, and I assume her classmates as well, came home from school believing I was doing something wrong.

This story illustrates the final point I would like to leave with you. The title of this conference is "Building a Shared Vision for Environmental Education," and I believe the theme is right on target because it focuses on the key word "education." To me, education is not advocating positions or presenting the person we intend to educate with our own preconceived notions or prescripted concepts. Education is advocating a critical thinking process that enhances informed and rational decision-making.

My concern with my daughter is not that she was challenging me on my view of the world. In fact, I appreciated the opportunity to have the dialogue and work through and discuss the issue. Rather, I am concerned that a real opportunity was lost for my child to develop her skills in gathering and synthesizing information so that she could make her own informed decision, a decision that she could personally defend. Unfortunately her teacher didn't approach this environmental education opportunity with, "Today we are going to look at the use of pesticides and their impact on food production and the environment." Rather, her educational opportunity began and ended with the statement, "Pesticides are bad for you and bad for the environment." I am not concerned with the final position my daughter takes, but I do want her to be able to use the critical thinking process to come to her own conclusion about this important public policy question.

A key point of education is process. As policymakers and educators, we have a responsibility to present our public with all sides of an issue and allow them to make their own well-considered and defensible judgments. Only then will we achieve that delicate balance between man's existence and nature. We have a monumental task at hand helping our society achieve that balance and the responsibility we share is of profound importance and significance. Our experience at USDA has taught us that education works. It takes time and is not always the easiest way to get something accomplished. The benefit of the discovery and education process, however, must remain unquestioned as the answer to our societal concerns.

Environmental Education: Where Do We Go from Here?

by

Louis A. Iozzi, Dean of Academic and Student Affairs and
Professor, Science and Environmental Education,
Cook College, Rutgers University, New Brunswick, New Jersey

EPA deserves our respect and admiration, because for a long time its leadership has boldly taken the initiative in comprehensively addressing our complex environmental issues and problems. Most recently EPA has displayed that initiative by sponsoring the Environmental Education Act and skillfully steering it through legislative traffic jams and around bureaucratic potholes to its destination—passage into law. I believe this law, over the long term, will have a truly dramatic impact on the lives of Americans and, eventually, on the lives of our neighbors all across the globe.

I fully concur with Mark Twain's observation about the power of education: "Training is everything," Twain wrote, "The peach was once a bitter almond; cauliflower is nothing but cabbage with a college education." As Thomas Huxley phrased it in *Science and Education*, "Education is the instruction of the intellect in the laws of Nature, under which name I include not merely things and their forces but men and their ways, and the fashioning of the affections and of the will into an earnest and loving desire to move in harmony with these laws." Before we know it, widespread indifference and ignorance about the fragility of the planet we call home will be only a dim memory.

EPA's education initiative is comprehensive, and the process leading to it was open, logical, and complete. Rarely does anyone show such remarkable progress in such a short time. To put it simply, EPA did its groundwork and its homework. Following are a few of EPA's more significant accomplishments:

- In October 1989, EPA established a new Office of Environmental Education.
- It also established the National Advisory Council for Environmental Policy and Technology's (NACEPT) subcommittee on environmental education and training. This committee includes educators; corporate executives; researchers; and local, state, and federal environmental officials who advised on environmental education and training needs and activities. The committee also sponsored the "Planet at Risk" series of public hearings on environmental education to ensure that everyone and every organization concerned about environmental issues had the opportunity to be involved. This openness, or willingness to involve everyone, is, I believe, characteristic of the history of this initiative and, of course, critical to its success.
- In November 1989, EPA established an internal Environmental Education Task Force, consisting of EPA personnel from the various EPA regional offices and laboratories, to review environmental education activities and to develop a coherent strategy by which the new Office of Environmental Education could meet future needs.

- EPA drafted a strategic plan for environmental education and distributed more than 1,000 copies, asking concerned recipients for reviews and comments. It published those comments in July 1990 in the document, Strategic Plan for Establishing the EPA Environmental Education Program.

- On November 16, 1990, just 2 months after the Office of Environmental Education was established, President Bush signed into law the National Environmental Education Act (PL 101-619).

We now have an Office of Environmental Education, environmental legislation to authorize and promote environmental education, and a broad-based, strategic plan to implement environmental education across the nation. The new law also authorizes funding: up to $12 million in fiscal years 1992 and 1993, $13 million in fiscal year 1994, and $14 million in fiscal years 1995 and 1996. Are these funds enough to complete the job? I doubt it. Are they enough to make significant progress in environmental education? Yes, I believe they are, and I believe we should start setting our priorities now.

Everyone in the environmental education community—environmental organizations, educators, teachers, business, and industry—must start implementing the provisions of the National Environmental Education Act and the strategic plan. In the two decades since passage of the Environmental Education Act of 1970 and the Stockholm Conference on Environment of 1972, we have gained a new perspective on the challenges confronting our students. In the 1970s, the emphasis was on developing an awareness of the need for conservation and the control of pollution that was thought to have been isolated locally, nationally, or, at most regionally. In the 1990s, the U.S. Global Change Research Agenda and the UNEP 1992 Conference on Environment and Development present a new perspective: to monitor and manage global change while local, national, and regional economic-development options are pursued in the context of international economic competition.

Our education system must develop scientific, technological, and political leaders with the expertise to develop options for global economic and environmental health. At the same time, we must educate citizens capable of understanding the sociotechnical and geopolitical options and the choices that must be made to ensure a safe planet. What should our next steps be?

- Industrialists, business people, developers, technologists, environmentalists, and myriad other people who, on the surface, appear to be philosophically at odds, must work together for the common good—the future of the Earth. We have passed many years debating what environmental education is and is not; explaining how environmental education differs from other approaches to solving the problems of our planet. We need to stop defining our differences and start exploring our commonalities.

- We need to encourage the development of master plans in all 50 states, and perhaps help underwrite them with dollars authorized by the new law. These master plans will help to ensure that our activities and dollars contribute to attaining well-thought-out goals and objectives. Without master plans, state approaches to environmental education would be uncoordinated and hit-or-miss. We would see too many wheels being reinvented. I think the effects of the old environmental education act were diminished because we did not foster state master plans strongly enough.

- We must unceasingly remind Congress to allocate the full funding specified in the National Environmental Education Act (Public Law 101-619). Under the old environmental education act, the funds authorized and the funds appropriated bore no resemblance to each other. We can't let that happen again; not to receive the entire funding authorized would cripple this initiative.

- Consortia, cooperatives, and similar regional alliances should be developed, to pool the many available talents and resources. These partnerships should transcend biases; they should forge strong and effective relationships among the business community, the higher education community, schools, and governmental and professional organizations of all kinds. We are all part of this planet, and working cooperatively is in our own best interest. In environmental decision-making there are no winning teams and no losing teams. We all win or we all lose.

- We must fashion environmental education for the 21st century by incorporating new technologies and ensuring that our students have the opportunity to weigh the costs and benefits of those technologies. We need computers and a variety of state-of-the-art educational technologies. Under the new law, we must develop programs to deal with new issues and opportunities, as well as the traditional ones that we have been including in environmental education over past years.

- We must develop a strong support network and structure that will help our 50 states work together, learn from each other, borrow programs, and profit from each other's experiences. EPA is probably in the best position to help coordinate these efforts.

Our schools are under the pressure of tremendous demands to deal with a variety of topics, issues, and problems. Thus, a key and perennial concern is how to squeeze environmental education into a curriculum that is already overcrowded. I believe we need a two-pronged approach to environmental education in our schools. First, our programs should be designed to help the schools accomplish their important educational objectives through environmental education. Therefore, new programs in environmental education should work to develop the skills that the schools are already trying to develop in our children. These include developing higher-order thinking skills, problem-solving skills, decision-making skills, and creativity, to name only a few. Creativity can, indeed, be developed, and solutions to our global environmental problems will demand highly creative thinking. In addition to infusing environmental education concepts into the existing curricula at appropriate places, or "environmentalizing" existing curricula, we need to offer special environmental courses, particularly in the high schools. One very effective way to do this is through the case study method, as exemplified in the programs developed by Hungerford, Iozzi, Stapp, and others.

We must also acknowledge and carefully bridge the vast gap that separates awareness from environmental action. Our students must develop many skills both to help motivate them and to equip them to take responsible action on behalf of the environment. These skills must be given top priority in all our environmental education programs and curricula.

I was very pleased to see that EPA sought to highlight environmental ethics in the new legislation and the strategic plan, even though these documents commonly referred to environmental science rather than environmental education. Surely we need to remind ourselves continually that environmental problems are as much—maybe more—a social problem as a scientific and technological problem. Therefore, environmental education must be dealt with holistically. The social sciences must be included as full partners in our efforts to educate our students to be environmentally knowledgeable leaders of tomorrow.

We have to define our role and our responsibilities toward our neighbors around the globe. Environmental education must become more international. Recently, we have been privileged to witness extraordinary changes in politics and social structures all over the world. I recently spent a week in St. Petersburg, Russia, meeting educators at the Herzen State Pedagogical University of Russia, one of that country's premier teacher preparation universities. I also visited with numerous scientists at Leningrad University. Without question, Russians have some of the most serious environmental problems on this planet, and they are just now beginning to systematically research them. Environmental education, too, is just beginning. Our Russian colleagues are anxious—to say the least—to cooperate and work with us to help solve environmental and environmental education problems.

As a corollary to the international aspects of environmental education, we need to consider and include a multiethnic and cultural diversity dimension in our environmental education programs here at home. One particularly important area, which has been ignored for too long, is the urban environment. Because I come from New Jersey, the most densely populated state in the nation, I am especially sensitive to the need for environmental education programs that focus on cities. This issue has been given more lip service over the years than any other aspect of environmental education. Now is the time for action.

The community of environmental educators is typically viewed as consisting of three components:

- University and college educators.
- Educators working in or interested in education at the kindergarten through high school level.
- Nonformal educators—those working in environmental centers, museums, state and national parks, or for other government agencies, such as EPA, USDA, and the like.

It behooves us to view these three units not as separate entities, but as the three legs of a stool, much the same way the land-grant colleges view their three components—teaching, research, and extension. All are integrally important, because each holds up the stool. If one leg is weak, the whole structure collapses. It is important that we ensure a close and more integrated relationship among the three units that comprise environmental education.

In closing, I want to mention a mistake from our past that we dare not repeat. This time around, we must support and work with EPA's Office of Environmental Education. That office has established a hefty and noble agenda, but, without our help, that agenda cannot succeed. Environmental educators are tremendously talented, imaginative, and hard-working people. They

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are our most valuable resource, and we should put that resource at the disposal of the Office of Environmental Education.

Finally, I want to challenge each of you to be visionary and creative in dealing with the troubling environmental education issues before us. Everyone in the environmental education community can contribute uniquely to achieving a substantial, holistic approach to environmental education. We have to reflect on the past and take from it whatever was useful, but we cannot let ourselves be bound by history or petty biases. I say petty biases because in the worldwide scheme, I can think of no differences among us that would qualify as anything but petty. One thing I learned from the area of Future Studies is that we can make the future happen. We have made a magnificent start—a second start, if you will. Let's now go forth and make the best of it.

A Program for the Future of Environmental Education

by

Frank Young, Deputy Assistant Secretary
for Health, Science, and the Environment,
U.S. Department of Health and Human Services

Two people in my life were instrumental in pointing me in the direction of a career in science. First, my high school biology teacher, John Carr, drew me into the field by a small project on the effect of salt on the development of the cardiovascular system of the snail. Then my college geneticist, Dr. Dale, 40 years ago, engaged me in intriguing research on the effect of coltrazine on the development of the fruitfly. From the perspective of my gratitude toward those individuals, I'd like to address what I see as the Department of Health and Human Services' vision for environmental education, as we work in partnership with EPA and the other agencies here today.

The intersection of the environment, development, and health is one of the most critical areas on which our agency focuses. Much of our work involves making the critical distinction between real and imagined risks. The public is often confused by our inability to communicate clearly the aspects of risk: the risk of lead, the risk of dioxin, alar in apples, and breast implants. All of these current issues deal with classical risk assessment.

Traditionally, in the health and environmental fields, we have focused primarily on the physical environment and the problems of water pollution, air pollution, and food contamination. We have also explored the relationship between the physical environment and our inner environment, in which toxic chemicals and a variety of food contaminants may affect our health. Vaccination is one example of our attempt to adapt our inner environment to an unhealthy physical environment by making our bodies immune to particular diseases. We are striving to eradicate polio through vaccination by the year 2000 in the same way that smallpox was eradicated years before. There is, however, another aspect of our environment that I would challenge educators to address with equal intensity—that is the social environment and the hazards of violence.

How with this myriad of problems can we formulate a logical and comprehensive program for environmental education? Where should we start? What are the touchpoints? I would suggest that the first touchpoint for any educational program is the outstanding primary grade teacher. I would place immediate emphasis on developing a summer scholarship program for teachers in science, supported by the private sector and others. It is a shame that teachers have to paint houses in the summer, because they lack the funds to spend that time developing their curriculum and honing their laboratory skills.

The next touchstone, I believe, is parental education. Many of you are parents, and most had parents who greatly influenced your learning environment. My father, for example, bought me a microscope when I had a tumor of the bone in high school. I later used that same microscope for my snail experiment.

At the Department of Health and Human Services, the Director, Dr. Louis Sullivan, is extraordinarily committed to environmental education, with a particular focus on minority and inner city programs. The scientists at the National Institutes of Environmental Health Sciences (NIEHS) have focused on bringing high school students and teachers into their laboratories in the summer. In this program, teachers have been able to update curricula and participate in experiments, and volunteers have been matched with mentors to learn more about particular fields. That person-to-person interaction is extremely important, and our laboratory scientists in the public and private sectors can play a major role in furthering this type of educational process.

In addition to the summer program, NIEHS has a variety of pilot programs that bring students from high schools and colleges into its laboratories. NIEHS has also been exploring the possibility of setting up a foundation to give honoraria to support students and teachers for the summer and for other programs. Three of the high school teachers attending this conference were sponsored by NIEHS.

The Commissioned Corps of the Public Health Service, to which I belong, has a program called Co-Step. This summer program involves about 900 high school students, who are made commissioned officers for the duration of their stay. About 125 of these students are sanitarians dealing with environmental programs; about 90 are engineers. We have found this interaction between the environment and education to be most stimulating to students and a way to introduce them to the variety of areas in which we work.

Another important facet of the Commissioned Corps is its ability to detail people to sites of emergencies or urgent need faster than any other agency. We dispatched nurses and physicians to Kuwait, and, under EPA's leadership, developed the public health programs and announcements in Kuwait during that time. Also, we supported EPA during the Chernobyl accident, and I chaired the Health Subcommittee there. We have an ongoing partnership of very close interaction with EPA in the field of environment and health.

The Department of Health and Human Services' final and most extensive area of focus is in graduate and postdoctoral training and career development. In this area, Dr. Sullivan has dedicated his efforts toward building educational minority programs in the fields of science, health, and the environment.

The Department of Health and Human Services is extraordinarily committed to working with EPA, the Department of Education, the Peace Corps, and governmental and nongovernmental agencies in building a strong program in education relating to the environment, health, and development. As a person who has benefitted from gifted high school and college teachers who launched me in my science career, I have "fire in my belly" to make sure that this program works and works well.

An Overview of Environmental Education Activities in Mexico

by

Arq. Alejandro Diaz Camacho
Director General of Environmental Education,
Ministry of Urban Development and Ecology

During the last 50 years, Mexico has been overusing its natural resources while following the economic development pattern accepted worldwide. Mexico is the third largest country in Latin America; it contains an incredible variety of habitats, ranging from lush tropical forest to vast deserts, snow-covered mountain peaks to great oceans. Between these extremes, we commonly find widely varied forest ecosystems within short distances. Mexico's complex topography, a long complex geological history, varied climatic conditions, and the convergence of two major biogeographical regions (the Neartic and the Neotropical) sustained a unique assortment of habitat and associated species. The modification of natural habitats and further degradation of already modified habitats are taking their toll on Mexico's resource base. If the present trend continues, our natural ecosystems will decrease from 40 percent of national territory to 17.5 percent in 30 years, significantly changing the diversity of Mexico's natural resources.

All this economic development has taken place in many other countries, resulting in severe damage to the environment, which, in turn, has generated problems to human health and the quality of life.

Is this really what we want? In Mexico this question is continually raised among government officials. In 1982, during the presidency of Miguel de la Madrid, the Secretaria de Desarrollo Urbano y Ecología was created (SEDUE is the equivalent to the National Park Service, the Fish and Wildlife Service, the Forest Service, and EPA combined). In order to make this secretariat functional, it was necessary to review our constitutional laws. The 27th, 93rd, and 115th constitutional articles had to be modified in order to create the General Law of Ecological Equilibrium and Environmental Protection. This law defines the nation's rights to its natural resources and gives the states and municipalities the responsibility for preservation and protection of their natural resources.

Five years ago, the government realized the importance of having an environmental education program that consequently reinforces the third constitutional article. The program was designed as a strategy within the nation's development and was conceived to work actively with Mexican society to confront the two main problems: the degradation of human health and the degradation of the quality of life.

This gave us an idea of the process of partnership and solidarity. The program faced many problems, one of which was the fact that environmental education is a relatively new pedagogical strategy and it was necessary to work on agreements and memoranda of understanding with the education and health secretariats. This was not an easy task; overlapping efforts needed to be overcome and policies and regulations had to be modified.

Our environmental education program has a threefold approach: formal, non-formal, and informal.

In the formal branch, we have been working very closely with the Secretaria de Educacion Publica and the universities in Mexico with projects that reach approximately 25 million people and one million teachers.

In the non-formal branch, we have been very actively working with different social sectors. With the private sector, we have motivated the different chambers of commerce in such a way that there is now an office of environmental protection in each one of the private sector enterprises. With housewives, we have developed workshops about domestic waste and recycling in all the large cities. With field people, we work with soil improvements workshops and on the reinforcement of regulations on chemical agricultural products. With nongovernmental organizations, we collaborate at the national and international levels. At the national level, we help them with meetings and workshops. At the international level, we have established a professional relationship with the North American Association for Environmental Education and are working on several projects with the World Wildlife Fund. With youth, we have projects of awareness and workshops that introduce them to their relationship with nature.

In the informal branch, we have projects with radio and TV stations and produce many different publications. We single out famous personalities and work closely with them to foster awareness of the environmental problem so that they later collaborate with us in different programs.

Mexico is one of the three focal points for the UNEP program which is housed in our office. Through this program, we are working on our coordination with all Latin America. At the moment, we are working on a meeting with all the Spanish-speaking universities. This meeting is one of the activities commemorating the 20 year anniversary of the Stockholm conference and will take place in November 1992.

Lately, we have been working with Canadian and U.S. officials developing a memorandum of understanding based on our three countries' recognition of the importance of environmental education, the role and importance of governmental leadership, the mutual benefits that may be derived from joint countries' actions, and the three countries' desire to emphasize more formal collaboration and the increase of environmental literacy. This memorandum is in its final stage and I would like to acknowledge the support that Lynn Elen Burton from Canada and Lois Haig from the United States have given me.

In closing, I would like to share with you a paragraph from the front page of this memorandum of understanding:

> Environmental education can become one of the factors in improving mutual understanding and strengthening trust between nations, and can contribute to the development of friendly relations between states and to the maintenance of peace and international security.

Closing Remarks

by

Lewis Crampton, Associate Administrator for Communications,
Education, and Public Affairs, U.S. Environmental Protection Agency

Environmental education is something we all have to work together to make happen; we must work collectively to accomplish our goals. We need dialogues not monologues to make this process work; we need a concern for quality and for the continual improvement of what we do. We need to respect everyone's viewpoint, while reaching agreement on a few basic goals and objectives that will allow us to focus, yet still permit diversity. We need to provide resources to the places where the real work is done. We need public/private partnerships. We need to focus not just on science and technology, but to think of environmental education as a holistic enterprise, involving the arts and social sciences as well. We need a positive and progressive program that avoids polarization of this issue. We need special emphasis on rural and urban issues and on environmental equity concerns. We need to find ways to reward and recognize the right actions and accomplishments. We need a global as well as a national perspective, and we need to develop a strong national and international network of support.

By meeting with all of you and having all of you meet with each other, we have formed a solid basis for getting the job done. I salute you for your efforts and your energy, and we at EPA will do our best to reciprocate that effort and energy to make our program a success.

SECTION THREE

PANELS

PANEL 1: SUCCESSFUL PARTNERSHIPS TO DEVELOP AND DELIVER ENVIRONMENTAL EDUCATION IN THE UNITED STATES

Moderator: Walter Bogan, Director
Science Resources for Schools,
American Association for the Advancement of Science

Randall Champeau, Director
Wisconsin Center for Environmental Education,
University of Wisconsin, Stevens Point

Carol Muscara, Director
Audubon Science Institutes,
National Audubon Society

Patricia Borkey, Teacher
Mathematics and Science Center,
Richmond, Virginia

Lillian Kawasaki, General Manager
Department of Environmental Affairs, City of Los Angeles

Herbert Thier, Director
Chemical Education for Public Understanding Program,
University of California, Berkeley

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Randall Champeau
Director, Wisconsin Center for Environmental Education

Background

Environmental education has become part of our heritage in Wisconsin. A teacher education mandate was first established in 1938, then reviewed and reestablished with revisions in 1980. In addition to a mandate for teacher education, Wisconsin has a mandate related to developing scope and sequence plans for our schools. Mandates became very important in establishing environmental education in Wisconsin. We have learned that mandates represent an important first step in that they help justify and provide credibility for the environmental education movement. Even though mandates do not cause something to happen—people do—we found the mandates were valuable in providing incentives for the development of environmental education.

I can't imagine environmental education in Wisconsin without partnerships, considering the field's interdisciplinary nature. Several years ago, the environmental education community in Wisconsin, which includes the Wisconsin Association for Environmental Education, Wisconsin Department of Public Instruction, Wisconsin Department of Natural Resources, the University System, University of Wisconsin Cooperative Extension (UW-Extension) and University of Wisconsin-Stevens Point (UWSP), the National Wildlife Federation, the Audubon Society, and the Sportsman Clubs all got together and asked the questions, "Where do we want to go? What will provide the incentives for environmental education in Wisconsin?" A plan was developed and proposed to our state legislature. This plan went into effect in 1990 and consists of the following three parts:

1. A Wisconsin Environmental Education Board, composed of upper level administrators from many of the organizations named above. Now in its second year, the Board has been very successful in identifying and addressing environmental education priorities in the state.

2. A $250,000 per year environmental education small grants program, administered by the Board. The grants provide incentives to the grassroots educators, including teachers, to pursue environmental education projects. Over 1 million dollars in requests have been received each year. Thus, grant requests far exceed available funds, and efforts are under way to increase the total amount available each year.

3. The Wisconsin Center for Environmental Education (WCEE). This center is discussed in detail below.

Purpose

In the College of Natural Resources at the University of Wisconsin-Stevens Point, a center for environmental education was established to promote the development, dissemination, implementation, and evaluation of environmental education. It is not intended to compete with any other environmental organization or center, but to help them accomplish their goals. Primarily, the center works with school districts in establishing programs for elementary and secondary school teachers and pupils.

The goals of the Wisconsin Center for Environmental Education (WCEE) as established by the state legislature are as follows:

- Assist the Environmental Education Board in addressing statewide teacher training needs in environmental education.
- Assist the Department of Public Instruction to periodically assess and report to the Environmental Education Board on the environmental literacy of the state's teachers and students.
- Develop, offer, and evaluate environmental education courses for teachers.
- Select and train natural resource and environmental education specialists to assist in providing environmental education courses and programs to teachers in this state.
- Assist the Department of Public Instruction and cooperative educational service agencies to assist school districts in conducting environmental education needs assessments.
- Provide environmental education workshops and consulting services to teacher educators from teacher training institutions located in this state.
- Establish an environmental education curriculum and materials center for use by school teachers, faculty of teacher training institutions located in this state, and other educators who need such materials.
- Assist the University of Wisconsin-Stevens Point College of Natural Resources in providing opportunities for teachers to complete advanced training in environmental education through the college's master's degree program.

The onsite staff of the WCEE consists of Dr. Randy Champeau (Director), Dr. Dan Sivek (Secondary Education and Middle School Specialist), Dr. Yvonne Meichtry (Elementary Education and Middle School Specialist), Ms. Carol Wake (Program Assistant), and two graduate students (former teachers). In addition, there are approximately 25 ad hoc faculty members who are developing and teaching environmental education courses for the WCEE throughout Wisconsin.

Successes and Supportive Partnerships

Following is a list of major programs and related partnerships that are facilitated by the WCEE.

1. Ad Hoc Outreach Faculty Program

Approximately 25 ad hoc faculty have been appointed to develop and instruct four one-credit introductory courses in environmental education for in-service teachers. All ad hoc faculty have M.S. degrees in environmental education-related fields and are geographically dispersed around the state. The WCEE has received two National Science Foundation (NSF) grants to fully support the development of this program. In just a year and a half, over a thousand teachers have participated in this course work.

Partnership. The 25 ad hoc faculty in this program consist of teachers, school administrators, curriculum coordinators, nature center educators, educators from the WI Department of Natural Resources (DNR), the Department of Public Instruction, and educators from UW-Extension. The NSF became an additional partner by providing development funds for the project. The courses were developed by the ad hoc faculty, meaning teachers developed courses for teachers.

2. Wisconsin Center for Environmental Education Master's Program

The WCEE, together with the UWSP College of Natural Resources and other universities around the state, established an "M.S. Leadership in Environmental Education" program for teachers. A fair number of teachers would like to label themselves "leaders in environmental education," and they are applying to this program. Teachers may pursue this degree while retaining their full-time teaching positions; selected courses from other universities are accepted and core courses are offered during break times (e.g., summer institutes). This is the first M.S. program in environmental education offered exclusively for teachers in the state of Wisconsin.

Partnership. This program is made possible through the cooperation of the WI University System, WCEE, and the WI Department of Public Instruction.

3. Annual Wisconsin Teacher-Student Leadership Conference on the Environment

The WCEE is working with the Institute of World Affairs, UW-Milwaukee to establish an annual environmental conference for teachers and students around the state. A pilot program was held in the fall of 1990 with over 300 students and teachers in attendance. In 1991, we cut off attendance at 900 and held the conferences in two different locations in the state to accommodate the increasing interest. We will open it up to an even larger enrollment in 1992.

Partnership. This program is made possible through the cooperation of UW-Milwaukee Institute of World Affairs, the WCEE, and the WI Department of Public Instruction.

4. Wisconsin School System Environmental Education Network

The WCEE has established a statewide environmental education network for schools. Each participating school has appointed at least one network liaison who is responsible for disseminating environmental education information, received through the network, to other teachers in the school.

This program has provided another step toward creating teacher ownership of environmental education. After less than 1 year of operation, over 1,100 schools are enrolled in the network.

Partnership. A consortium consisting of the WCEE, the Department of Natural Resources, the Wisconsin Association for Environmental Education, the Department of Public Instruction, and the UW-Extension was formed to develop and maintain this network.

5. Assessment of Student and Teacher Literacy

This literacy assessment tool is in process right now; it will be piloted in spring of 1992. Three graduate students (former teachers) who have recently been appointed to work with the WCEE are developing instruments to assess environmental literacy of 5th and 11th grade students, and to combine assessment and literacy for Wisconsin teachers. The WI Department of Public Instruction will begin statewide testing in fall of 1992.

Partnership. The cooperative efforts involved in this program are exemplified by the membership of the 15-person advisory council which directs the project and the involvement of about 25 K-12 teachers, who validate the instrument. In addition to teachers, the council includes Department of Public Instruction environmental education and test and measurement specialists, University environmental educators, Department of Natural Resources educators, a Wisconsin Association for Environmental Education representative, and a WI Teachers Union representative.

6. Resource Library

The WCEE serves as a resource library for elementary, middle, and secondary school teachers. The WCEE acquires environmental education materials, reviews them, and distributes the reviews through its school network.

Partnership. The Wisconsin State Legislature provides funds for the purchase of materials. Access to the collection of materials is provided by computer link-up through the Wisconsin State University Library system.

7. Training for Teachers Entering Wisconsin from Other States

To receive teacher certification in Wisconsin, candidates, including those moving into the state, must meet the state's preservice teacher training mandates for environmental education. Currently, the WCEE offers five one-credit weekend workshops on environmental education to assist teachers who have not had environmental education training but are seeking certification in Wisconsin. This weekend workshop is taken along with a correspondence course in environmental science from the University Extension, Madison. The course and workshop service over 150 educators per year.

Partnership. This program is made possible through the cooperation of the UW-Madison, UW-Stevens Point, and the WI Department of Public Instruction.

8. Environmental Education Bulletin

EE News is an environmental education newsletter with a distribution of 15,000. A consortium of state agencies and organizations work cooperatively to produce and disseminate the publication. The cooperating agencies elected to produce this joint newsletter rather than each producing one independently. The WI Department of Natural Resources manages the project.

Partnership. This joint newsletter is made possible through the cooperation of the WI-Department of Natural Resources, WI Department of Public Instruction, Wisconsin Association for Environmental Education, and the WCEE.

Future

The above examples demonstrate how WCEE supports environmental education and helps to institutionalize it in the state of Wisconsin. The WCEE is part of University base funding and is expected to remain as a well-supported program for the long term. The programs facilitated by the WCEE are intended to be consistently reviewed and evaluated. Redirection or new programs will be developed as determined necessary. The WCEE is viewed as an extremely successful program across the state, and it might serve as a strong model to other states looking to develop a partnership approach to environmental education.

Carol Muscara
Director, Audubon Science Institutes

For more than 100 years, the National Audubon Society has provided leadership in scientific research, wildlife protection, conservation education, and environmental action. Originally, we were most interested in the preservation of the rapidly disappearing snowy egret, whose plumage was a popular addition to women's hats. Since that early interest in threatened and endangered species, the National Audubon Society has grown to a membership of more than 450,000 in the United States and several Latin American countries.

Audubon's members provide their communities with opportunities to explore nature. They are environmental activists, and supporters of educational programs in their localities. Audubon's staff includes scientists, educators, lobbyists, lawyers, and conservation professionals who typically have worked for years to protect precious wildlife habitat through education and legislative action. Audubon's field researchers and policy analysts are on the cutting edge of research into issues such as global warming, solid waste management, and wildlife protection. But above all, the National Audubon Society provides education for the leaders of today and for the leaders of tomorrow.

Purpose and Partnership

The Audubon Science Institutes (ASI) is just one of the many educational programs supported by the National Audubon Society. It is a partnership among business, a federal agency, a nonprofit organization, and, most important of all, teachers. ASI is providing mid-level teachers in school districts that serve minority populations the tools to incorporate environmental education into their existing science programs. We help them use technology as a teaching tool.

In 1990, Audubon received a grant from the U.S. Department of Education and an additional grant from Citicorp North America to expand the Audubon Science Institutes. With their help, ASI uses a trainer-of-trainers' model to bring environmental issues to students in a variety of school systems. In each district, ASI worked through science instructional leadership to enlist district support and to choose their teacher team to become part of ASI. After training, those ASI scholars presented workshops for their local colleagues. Districts were encouraged to schedule workshops in an effective format and at the best time for their teachers. Two teachers from each of seven school districts were chosen by their districts to become ASI scholars. The ASI sites were Abington and Philadelphia, Pennsylvania; Bridgeport, Connecticut; Chicago, Illinois; Houston, Texas; Bronx, New York; Montgomery County Public Schools, Maryland; and Washington, DC.

In June, we convened at the Audubon Ecology Camp in Greenwich, Connecticut, for a week-long residential training workshop. Participants learned from expert speakers about environmental issues that can be integrated as interdisciplinary examples into their existing science curricula. The teachers participated in environmentally oriented hands-on activities that could be easily modified for any classroom with few materials. They also worked together in groups, experiencing the thrill of combined effort. They explored the natural environments of Audubon's 480-acre ecology camp. Over the course of the camp experience, they metamorphosed from techno-neophytes to techno-teachers who could easily use computers, videodiscs, and other technologies for enhancing their instruction. These participants internalized adult learning strategies and emerged competent to conduct Audubon Science Institutes in their own district for their teaching colleagues. Each ASI scholar also chose some technology to take home for his or her own teaching.

ASI offers a variety of benefits to its participants: an information resource bank, instructional materials, technologies of choice, professional opportunities, effective teaching strategies, followup, and continued support.

During the summer of 1991, the teacher teams in five ASI districts trained 78 colleagues using instructional modules developed by ASI. Those teaching modules emphasized hands-on, student-oriented, problem-solving; collaborative learning activities; and environmental issues of atmospheric quality, endangered species, land use, population, national parks, rain forest preservation, solid waste management, water as a natural resource, and wetlands. Curriculum correlations, technology tie-in, extension activities, interdisciplinary suggestions, and resources were included in each instructional module.

ASI scholars, teachers, and our supporters have 24-hour per day access to ASI staff through a voicemail system, which offers an instructional tip of the week, as well as access to me and a multitude of Audubon environmental experts. Using the system, teachers can update their environmental IQ at their leisure, and get a question answered without playing telephone tag.

Citibank employees and Audubon chapter members are active participants in ASI. They offer mentoring, information, and insight on local environmental issues. An annual Citibank Educator Award is presented to the most effective ASI participant. ASI has facilitated partnerships among education, government, and business to enhance environmental awareness nationwide.

Successes

Our first formal year of ASI partnership has been incredibly successful. A list of ASI achievements follows:

- Betweeen 1989 and 1991, a total of 143 teachers were trained in new techniques for enhancing their science programs.
- A trained team of two or three teachers is serving minority populations in seven school districts.
- More than 20,000 students experienced environmental issues in 1990-91 as a result of ASI.
- A workshop model for training teachers has been developed for use in any school system.
- More than 60 ASI teacher-developed lesson plans (K-12) were produced for integrating environmental issues into earth, life, and physical science courses.

- Seventeen classrooms received new technology, as well as teacher commitment and knowledge.
- A data base of free or inexpensive resources for environmental education has been developed for teacher use.

As a result of ASI, teachers have become more aware of resources and opportunities within their districts. They also have gained professional-level experience and training, which has enhanced their confidence and self-esteem. Some have even become technology leaders in their schools. One ASI Scholar now teaches at the Illinois Institute of Technology Academy of Math and Science in Chicago. He will include environmental issues as one of his teacher training workshops. ASI teachers gain a sense of professionalism from their experiences. One recently said, "I used to be just a teacher, but now I can do things I never believed possible."

Through science learning on real world issues, students have become more aware of environmental issues and the interdependencies of all systems. Many are taking field trips to places they have never been, because of ASI field trip exposure and introduction to nearby sites.

Future

We have already had our first followup session, which included an environmental tour of Washington, DC, presented by Dr. Jim O'Connor of the University of the District of Columbia. The tour emphasized using the urban environment as a learning place. We explored the wonders of museums and of cemeteries. Each team then reviewed its local workshop and suggested improvements for next year. Two more followup sessions and an advanced workshop are planned for the 1991 team. These scholars in turn will share their experiences, ideas, and science lessons with new ASI participants in 1992. Our goal is to conduct Audubon Science Institutes nationwide.

We have experienced trainers and will, with the help of our sponsors, train more teachers to incorporate environmental issues into their science programs. We are excited about forming partnerships with others interested in enhancing students' awareness of their urban environments, their rural environments, and the interdependence of all things.

Patricia Borkey
Teacher, Mathematics and Science Center

The Mathematics and Science Center is a consortium composed of five public school districts in Virginia—the city of Richmond and the counties of Chesterfield, Goochland, Hanover, and Henrico. We deal with inner city, urban, suburban, and rural school populations and have a history of 25 years of cooperation among these school districts.

Purpose

Our purpose is to reach K-12 students in these five public school districts of the Richmond area with the most up-to-date information on environmental issues, to help students understand how they impact their environment, and to help them appreciate the unique environments that exist. Specialists go into the classroom, have students come to the Center for lessons, or meet teachers in the field to collect and analyze data. Lessons are matched to state goals and objectives and scheduled for different grade levels to prevent overlapping or heavy concentration in any one area. As well as reaching the entire student population, the Center has modified the old Chinese proverb about teaching a man to fish to read "teach a teacher and you reach a thousand students." We provide unique in-service teacher training that demonstrates the newest curricula, the most recent advances in data collection, and best information on environmental problems.

Programs and Partners

The activities of the Mathematics and Science Center depend on partners and partnerships. Some are very active partnerships, while others are passive but very important to the consortium efforts. For example, classroom teachers working with a grant from the Virginia Environmental Endowment through Richmond Renaissance developed an activity guide called *River Times* that was an EPA regional winner and helped other classroom teachers use the James River, in an interdisciplinary approach, as a study site right in their own backyard. Environmental issues were melded with social issues, chemistry, language arts, and other subjects to develop an awareness of the value of a natural resource that is important to Virginians.

Working with another grant and Dr. Louis Iozzi from Rutgers University, a teacher in-service training workshop was held on "Preparing for Tomorrow's World." This workshop taught the use of environmental dilemmas to help students resolve issues on the environment and develop a sense of responsibility toward it.

Working with the Chesapeake Bay Foundation, the Center provided in-service training so that teachers could bring students into the field on canoe trips, paddling our bay tributaries, collecting data, and studying the problems affecting this vital estuary.

The University of Delaware worked with the Center on a Coastal Oceanic Awareness Studies (COAST) project for enriching marine science curricula. This project was offered several times and was the forerunner of marine education in the Richmond area. So much interest was generated that the consortium built an aquarium, the largest one in the state at that time, with the help of the five public school districts. This was a large commitment of funds, but the aquarium provided outstanding experiences for students, as well as housing organisms that could be taken to the schools for classroom lessons. It allowed our staff to extend marine ecology education and problems associated with the marine environments into a unique experience for students K-12.

The State Department of Education has worked with the Center in sponsoring Regional Governor's Schools and gifted and talented programs such as the James River, Freshwater Ecology program. With their help, and that of the five school districts, we have sponsored Saturday morning classes that deal with the environment for all age groups, as well as teacher field trips to study certain environmental sites and help teachers with field work for their students.

Working with the University of California at Berkeley, we have promoted information to create a greater interest in science for women and minority groups, and plan to concentrate our efforts in the environmental area in the future.

Center staff have presented environmental programs, in-service training, and workshops to the Gifted and Talented Resource Teachers, the Mid-Atlantic Marine Educators Association, the Greater Richmond Council of Science Educators, the State and National Science Teachers Associations, and other groups. These presentations help us keep up with current issues and trends as well as share our information.

The DuPont Corporation recently awarded a $250,000 grant to the Center to develop and implement an environmental studies program that utilizes a pond site as well as an environmental simulator for studying and monitoring some aspect of our air/water envelope. A one-of-a-kind aquatics classroom was designed to allow students the opportunity to look at pond organisms with microvideos, test water chemistry with the latest devices, record all information on computer for further analysis at their schools, and discuss the constant monitoring of the site and how it could be used for their scientific investigations/projects.

The Morgan Foundation has recently funded the purchase of an aquatic van that will be equipped by funds from the DuPont grant and Richmond Renaissance. The latest biological and chemical gear will allow in-depth field study of resources close to home by teachers and students in the Richmond consortium.

In the 1990-91 school year, the Center served over 175,600 students in weekday enrichment programs and 2,400 students and 1,100 parents in Saturday and summer classes, and trained over 1,750 teachers in in-service programs.

Successes

Our success is measured by the evaluations we receive from the students and teachers, the comments and continued (and enlarged) support by the public school divisions, and increased financial support from the Foundation Board that helps the Center spreads its message and find adoptees for its new projected programs. We feel we are the first in global environmental education, and the most outstanding in getting field equipment to study sites and teaching students to use the latest monitoring gear. We are a resource for students doing scientific research and designing projects in their classrooms. Teachers, students, and the general public call us when they want answers to environmental questions and would like us to provide consultants for preparing outdoor study sites, developing new curriculum ideas, and implementing new field activities. A measure of success, we feel, is that people come to us for answers and students consider a trip to the Center, or participation in a class, as a real treat—a day of learning that is fun and exciting, even if it is science.

Lessons Learned

We have learned that cooperation and understanding are the keys to successful partnerships. If we want maximum participation, we must get supervisors and administrators involved in the planning, curricula, and field work aspects so that teachers receive the support they need to implement their programs. We know we must be specific about the content, involvement, and responsibilities if all participants are to meet our expectations, and their own, and get full benefit from the program.

The target age group for programs must be considered very carefully and based on recommendations from the schools we serve as to the needs and interests of students and teachers. We have a very close working relationship with the teachers in our consortium, so that they feel comfortable about using our facilities and will let us know what we need to add.

Some partnerships are not home-based but are all over the state, or even in other states. We must keep in touch with these groups and continue to share our resources as each partner derives benefit. We have worked with the National Aquarium in Baltimore, the Virginia Marine Science Museum, and the Science Museum of Virginia, to name a few. These partners can supply facilities we do not have, and we can supply them with clients they do not have.

Future

We also have many challenges, including selecting only those institutions and activities that are requested and needed by the people we serve. We need to meet their demands, but we also need to let them know the latest about rain forest destruction, global warming, sea level rise and its effects on coral reefs, and other issues. We need to keep our constituents informed, but to do that, our staff needs to be informed as well. This requires a lot of research and reading time, checking sources, and development and implementation time for new programs and new avenues of exploration.

Then we have the problem that everyone should have—if you do the job well, everyone wants you. But we do not have enough staff, or funding, to reach every school, every teacher, and every class, so we are always looking for other agencies to help us out. We have developed some ways to maximize our presence, including using part-time staff, volunteers, and retired teachers, and designing lessons in kit form, which go to the classroom teacher with instructions and handouts.

We now find that we cannot take advantage of all the available partnerships, because we simply do not have enough staff members or hours in a day. We often get funding for the latest equipment and implementation, but we need continued funding for maintenance and personnel. The real challenge is to do as much as we can, to the best of our ability, and keep expanding our field of partners and environmental curricula.

Lillian Kawasaki

General Manager, Department of Environmental Affairs,
City of Los Angeles

Background and Purpose

How do we address environmental education issues from a local government perspective, especially from the perspective of a large local government that has to deal with multicultural issues? The City of Los Angeles represents an ethnic, cultural, and economic diversity that is found nowhere else in the nation and perhaps in the world. We have over 60 spoken languages and a population of 3.5 million. With the growth in the African-American, the Hispanic, and the Asian Pacific Islander populations, we no longer have a racial or ethnic majority.

Along with that evergrowing and diverse population, Los Angeles County has 8 million motor vehicles and the worst air quality and traffic congestion in the nation. Los Angeles also has polluted waters, vanishing natural resources, and lack of space to dispose of its garbage. An important message, however, is that these problems are not unique to Los Angeles; they really represent a glimpse into the future of America, particularly in the large cities across the nation.

With continuing population growth, Los Angeles is really at a crossroads. It is critical that we begin to protect our environment and our quality of life, and we don't have a lot of time in which to do it. Although it is convenient to assign responsibility for solving these problems to business, industry, and government, the ultimate and essential solution must be our ability to empower the individual and develop the political and the public will to act.

One of our greatest challenges, therefore, is educating and involving peoples from all ethnic and cultural backgrounds in environmental protection. A new and creative strategy is needed to reach diverse communities as well as targeted audiences, such as youth and ethnic groups. This strategy must include increasing awareness and promoting community-based involvement in protecting and improving the environment.

The Environmental Affairs Department is in its infancy, only about a year-and-a-half old. I'd like to present some of the lessons we have learned thus far about multicultural education and then present some of our solutions.

Lessons Learned

First, in order to achieve an effective education program, we have to rethink the mainstream traditional concept of the environment. We need to redefine the environment in much broader terms to make it relevant and appropriate to urban and inner-city communities. We traditionally think about the environment in terms of natural resource protection of trees and mountains and pristine places, but the environment is also about people, and about protecting the health of individuals and families. Lifespans shortened because of dirty air and toxic exposures are as much an environmental concern as ozone depletion or tropical deforestation.

We have also learned that each community is very diverse, racially and culturally, and has different priorities and responses regarding environmental concerns. It is not enough in inner-city communities to be sensitive to different languages or cultures; there must also be a healthy respect for those differences. We have to learn that diversity is good, and that we can draw strength from it.

We must also remember that in an urban context, there are a lot of other priorities, including poverty, crime, drugs, joblessness, and racial tension.

Environmental education is only as effective as its ability to call people to action and to give them a sense of ownership in their own environment. One of our greatest challenges is to build within a community itself the motivation and leadership required for a commitment to protecting the environment. This requires individuals in the community to become involved in the major decisions that affect their lives.

We must recognize issues of social and ethnic equity, and social justice, and accept that all people must share in both the benefits and the costs of environmental protection. A disproportionate burden of environmental protection has traditionally fallen upon communities of color and the poor. This kind of "environmental racism" can take a form as obvious as the siting of landfills and polluting industries, or can be as subtle as the location of mass transit systems and recycling centers.

Effective environmental education in a multicultural context requires that we add an additional two "R"s and one additional "E" to the basics of education. The first "R" stands for *roots*, the second, *respect*, and the "E" for *equity*.

Partnerships and the Future

How is the City of Los Angeles translating these lessons into action? Obviously, environmental education and equity are very important issues for which we don't have all the answers, but we are working to address the problems. The Environmental Affairs Department is collaborating with other municipal departments to develop a city-wide environmental program to take into the community. We need to solidify the policy that all environmental issues are linked and are directly related to the overall quality of life for the citizens of Los Angeles. A primary strategy is to build upon existing and potential networking opportunities, and to establish partnerships with other agencies, organizations, and the private sector to maximize our efforts and resources.

First, our department has appointed an environmental coordinator to take the lead in issues related to environmental education. We are also working on multiple fronts with communities, schools, and businesses.

Communities

In January 1992, the city's Environmental Affairs Department began holding monthly community meetings aimed at taking "City Hall" into the community. The purpose of these meetings is to promote environmental awareness and involvement. Because we know that people in a community won't necessarily rush to a meeting just because we hand out flyers or open the doors, we are meeting first with religious, political, and other community leaders. Our goal in forging these partnerships is twofold: we need to understand the community's needs and concerns in the context of the environment, and we need to enlist the support of community leadership to solicit their constituents' participation in community forums and in proposing solutions on environmental issues.

In establishing partnerships with communities, it is necessary to build and follow up on relationships over time; for the most part, these relationships don't currently exist, and we need to develop long-term commitments.

Youth Participation

We all know that young people are the key to the future. Our focus in reaching out to youths has been on youth service organizations, such as the YWCA and Girl Scouts, and on local after-school programs and church organizations. These groups deal extensively with youths every day and yet have very little information and resources to deal with environmental issues. For the volunteers and the staffs of these organizations, we will be sponsoring environmental education workshops, so that we can "train the trainers" and reach the maximum number of people possible. The purpose of those workshops will be to better equip community leaders to build environmental programs into their organizations.

In the Los Angeles Unified School District, the Environmental Affairs Department plans to bring environmental education into the schools. Several projects that relate directly to schools are in the planning and conceptual stages.

We are also expanding our own student intern programs, working with local universities and scientific organizations such as the Southern California Academy of Sciences. The goal of these internships is to encourage people of color and other under-represented groups to enter the environmental professions. Because of the complexity of the issue and the need for scientific expertise, we need not only to engage the lay person and the general public but to recruit technically and scientifically trained professionals as well.

Business Outreach

Active outreach to the business community also is critical. To sustain the environment, we need to look at the critical relationship between economic development and environmental protection. This is particularly crucial with regard to small- and medium-sized businesses. They have a very culturally diverse workforce and are struggling to understand the regulations and how to comply with them; many companies are struggling just to stay in business. We want to give these businesses the tools they need, such as a computerized network we are currently developing to give environmental assistance to small businesses. But business compliance with regulations is not enough. We have to build that same feeling of stewardship in the business sector that we are trying to build within communities. This means finding ways to link a strong environment with a strong economy.

I've had community people tell me, "If you're asking me, do I want clean air or do I want a job, it's no choice. Give me the job." We think that's a choice nobody should have to make.

Technical Support Services

To support an environmental education program, you have to have a strong, credible base. You can bring City Hall into the communities, but you also need to provide services and assistance so people can get technical information and answers to their questions. We are providing this through an environmental information center, which offers a toll-free hotline, multilingual resources, and a community guide to environmental resources. We are also beginning environmental education programming on our City Cable Television. We see the need for stronger alliances with the media: we need the celebrities to send out the environmental message, but we also need local grassroots newspapers to help us connect with the communities. In addition to better outreach strategies, we need improved ways to measure and evaluate the effectiveness of our outreach efforts.

It is most important that we begin to build these broad coalitions. In networking for environmental education, we want to link government, industry, communities, and environmental activists. Environmental activists need to be sensitive to community-based issues.

The opportunities and challenges in this field are tremendous. I commend the federal government for organizing this meeting, but I urge them to work more closely with local government, with grassroots organizations, and with the people who are "in the trenches" and being asked to make hard decisions and lifestyle changes. Local government, like the City of Los Angeles, is excited to participate in the development and implementation of the national strategy and policy for providing environmental education. Our concern for the environment and the quality of life, not only today, but in the future, is going to provide the common ground for people of all cultural and racial backgrounds to come together.

Herbert D. Thier, Director
Chemical Education for Public Understanding Program

Purpose and Approach

The Chemical Education for Public Understanding Program (CEPUP) began 9 years ago as a small California-based project. Today we are working in over 40 states in the United States, Australia, Spain, Canada, and a number of other countries. The program is funded by a major grant from the Instructional Materials Development Division of the National Science Foundation and by private industry.

Understanding chemicals and how they interact with people and the environment is essential to informed citizenship in any society. It is not productive for a society to have its populace react to issues solely on an emotional basis and allocate our limited resources without a consideration of the larger issues. Rather than anxiously demanding answers, it is essential that:

1. People learn to ask pertinent questions, obtain evidence, and use it as the basis for decision-making.
2. People understand the limitations associated with scientific evidence.
3. People understand the nature of scientific inquiry in order to participate in formulating effective chemical-related policies.

CEPUP is helping to meet this educational need by designing activity-based instructional materials for both schools and the community. The activities highlight chemical concepts and processes associated with current societal issues. The goal of CEPUP is to develop greater public awareness, knowledge, and understanding about chemicals and how they interact with our lives. Accomplishing this goal requires the development of materials-centered experiences that motivate people to challenge their preconceived notions about chemicals and their uses in our society. It is necessary to involve the general population in these kinds of materials-centered experiences about chemicals and their uses to eliminate public ignorance about chemicals.

In designing CEPUP modules, we are concerned with the teacher's ease of use in the classroom. For example, drop-controlled bottles of chemicals are used so that there is little waste and little possibility of a mess in the classroom. We also are very concerned that students have hands-on experience, not that someone tells them about it.

Chemicals in Society

The CEPUP contribution to community and workplace education about chemicals is called the Chemicals in Society program. It currently consists of seven activities designed for and tested in the realities of community education. These activities provide experiences that help participants explore their knowledge and attitudes about chemicals, learn the meaning of parts per million, think about household hazardous waste issues, and develop a greater understanding of risk and risk comparison. The purpose of Chemicals in Society is not to tell the public how to think or act regarding an issue, but rather to provide them with fundamental knowledge, an understanding of useful processes and procedures, and confidence in their own abilities to understand issues and make decisions. As a result, the public's decision-making regarding chemical-related issues will be based more and more on effective consideration of the evidence instead of emotional appeals from a variety of advocacy groups.

The content of the teaching modules is not *chemistry* but *chemical*, cutting across the science disciplines, with the general theme of understanding chemicals and their effects on people and the environment. The approach, termed *issue-oriented science*, is to teach the science content, processes, and problem-solving skills necessary for individuals to make informed, personal, evidence-based decisions on chemical-related issues. This approach is consistent with the thematic emphasis of emerging science guidelines and curriculum frameworks. The implementation of issue-oriented science can change teaching practices and have a lasting impact on student science learning and performance.

The goal of issue-oriented science is the development of an understanding of the science and problem-solving processes related to social issues without taking an advocacy position. These issues might be quite personal to students, such as whether to buy organic fruit in the supermarket, or based in the community, such as deciding on where to site a new landfill, or even global, such as deciding on policies regarding the use of freon.

Students in issue-oriented classrooms learn to understand scientific evidence and its limitations, to assess risks and benefits, to ask questions, and to make evidence-based rather than emotional decisions. Teachers in issue-oriented classrooms create situations where understanding can grow, where issues can be explored, and where students can interact. The teacher models tentativeness, objectivity, and nonadvocacy, and is willing to say, "I don't know...let's find out," and, "Science cannot answer that question; it's a public policy issue." The content and approaches of issue-oriented science can be the basis for the kind of science/environmental education needed in the 1990s.

Partnerships

All of CEPUP's efforts in the community and the workplace, such as the Chemicals in Society materials, have been completely funded by private sources. For example, CEPUP has produced for the General Federation of Women's Clubs (GFWC) in the United States an adaptation of Chemicals in Society called Living with Chemicals. Funded by Shell Oil Company, this project provides training and materials to club leaders all over the country. Over 600 women were trained in the first 2-year phase of the project, and their presentations reached over 60,000 people in communities across America. The project is currently involved in a second 2-year cycle funded by Shell Oil.

CEPUP has an advisory board which includes Chevron, Exxon, the U.S. Environmental Protection Agency Region 9, the University of California, the League of Women Voters, and Sierra Club members. These groups are not always in agreement on today's issues. They come together, however, through CEPUP, to accomplish some of the goals of environmental education.

We have a variety of groups in order to be as broad based as possible. If this program is to be successful, we must raise funds outside of the government. Independence, however, forms the basis for CEPUP's guidelines for accepting support from any outside group, whether it is an industry, an environmental group, or a government agency. Whether the funds are intended for development of new materials or are to support implementation, these guidelines are:

1. All funds must be given as unrestricted contributions for the purpose of the project to the academic institution responsible for carrying out the program.

2. A broadly representative advisory board (including community interests) must be established to review all decisions.

3. Independent academic responsibility for all program content must be assured. The giving of money does not mean that the donor's materials will be included in the program.

4. Funding sources must be as diverse as possible.

5. Academic scientific review for accuracy and lack of bias for all materials must be continuous.

CEPUP has benefitted tremendously from the input of industry leaders around the country, such as scientists at the Lawrence-Berkeley Laboratory of the Department of Energy. The contributions of industry personnel to the actual development of the CEPUP modules are necessary if the modules are to reflect what is taking place in the real world at the interface of science and society. For example, Robert W. Hirsch, currently Vice President of ENVIRO Safe Inc., provided CEPUP with information about and permission to use an adaptation of a patented process to stabilize certain hazardous wastes. The process is the basis for the culminating activity in the newly published CEPUP module, *Toxic Waste: A Teaching Simulation*. Students carry out a simulation of the process, compare it to other more traditional approaches like precipitation, and decide on the advantages and disadvantages of each. Learning about and discussing the use of the process in the real world helps students better understand and appreciate the goals of the module.

Another somewhat different example has been the contribution of Dr. Jack Collette, Director of the Central Research Development Department at the DuPont Experimental Station in Wilmington, Delaware, and his colleagues to the CEPUP module on plastics. They have reviewed the content for accuracy, suggested changes to eliminate substances formerly used that are now considered safety problems, and have helped CEPUP develop safer alternatives. In addition, they made the staff aware of a research study by Franklin Associates for the U.S. EPA on the relative energy costs of paper and plastic bags. CEPUP held up the final revisions of the module and incorporated the results of the study as a major component of the module's conclusion.

These examples illustrate the dimensions of an ongoing process and define CEPUP's policy regarding the use of industry input to development: (1) all specific input is provided at the request of the academic staff of the project; (2) like all other input, it is carefully checked for accuracy and lack of bias by the staff and CEPUP's scientific review board; (3) whether and how the information is used is determined by the project staff; (4) drafts are sent to the individuals providing the input to get their comments and suggestions on accuracy, lack of bias from their point of view, and any suggestions for improvement; (5) all materials produced are copyrighted by the project and acknowledgement is given to the individuals and companies providing the information. Encouraging this kind of input has provided the program with information and resources not available by any other means. To date, this development input has been provided at no direct financial cost to the program.

Successes

The success of our development and review process was exemplified recently with our publication of a new module on plastics. In the last month, I have received comments that we didn't raise this or that from industry's perspective or that we didn't raise enough of this or that from an environmental standpoint. I interpret that to mean we are just about where we want to be—namely, providing the evidence in a nonadvocacy way. In a study for the International Association of Consumer Unions, the Australian Consumers' Association identified our goals as a standard for projects around the world.

The Future: Environmental Health Risk Education for Youth Project

A new pilot project on environmental health risk education for youth is being developed as a collaborative effort among the government, universities, and schools. It is funded by the EPA Office of Environmental Education in cooperation with the Office of Solid Waste and Emergency Response and EPA Region 2. Additional support has been committed by the University of Maryland and the California State Department of Education. This project is a cooperative effort among CEPUP; Dr. Vincent Covello, head of the Risk Center at Columbia University; our Project Officer, Dr. Maria Pavlova of EPA; and myself.

The purpose of the project is to help students and community members better understand society's impact on the environment and the effects of the environment on their health and safety. The goals of the project are:

- To determine how to help students and community members understand the principles of environmental science and risk assessment.
- To help students and community members use this knowledge effectively to participate as citizens in public policy decision-making.
- To develop improved methods for enhancing environmental health risk literacy.

We collect baseline information on students and community members' understanding of and attitudes toward environmental health risk concepts and issues. Using this information, we plan to adapt and design instructional materials to inform the public about risk perception.

We will provide experience-based instruction on environmental health risk based concepts and issues to a subset of community members and students and analyze the impact to see if we have made a difference. The overall goal of the program is to help the public achieve a greater understanding of risk perception.

This pilot project was designed based on the conclusions and recommendations of a workshop sponsored by EPA and the Federal Task Force on Curricula, Concepts, Strategies, and Resources held in Washington, DC, and also on the Environmental Youth Forum.

Panel 1: Question and Answer Session

Successful Partnerships to Develop and Deliver Environmental Education in the United States

Moderator: Walter Bogan, American Association for the Advancement of Science

The question and answer session for this panel was a free-ranging discussion of some of the most important issues raised by the panelists in the plenary session.

Does Environmental Education Pertain Primarily to Mathematics and Science or Does It Encompass All Disciplines?

U.S. EPA Administrator William Reilly's emphasis on math, science, and technology as the major foci for environmental literacy in his videotape presentation was questioned strongly. One panelist said that environmental education needed to use interdisciplinary methods. In addition to providing engaging real-world examples for teaching life sciences and earth sciences, she felt that environmental education provides a context for projects in art, music, English, and social sciences. Another participant felt that environmental education was an ideal vehicle for teaching English-as-a-Second-Language.

Several participants felt that educators should look at environmental education as an opportunity to bring all disciplines together to focus on a single theme. A teacher emphasized environmental education's use of life skills such as organizing information, interacting with others, identifying and standing for personal values, and working in a democracy. Others emphasized that because of its real-world experiential focus, environmental education is remembered and internalized by students in ways that traditional disciplines often are not.

It was also suggested that educators think of the different disciplines, such as science or math, as tools to teach environmental issues rather than the other way around.

One panelist agreed that environmental education encompasses citizenship issues, but felt that it was equally if not more important to use environmental education to prepare a scientifically and technologically capable work force. The panelist emphasized that our competitiveness as a nation in the fields of global change and pollution control technologies depends on federal agencies encouraging students to become scientists and engineers. He felt that environmental education would provide the "hook" to get students involved in the environment at the elementary level so that they would pursue math and science in college.

Another participant expressed concern that environmental education would become adjunct to international competitiveness, and would be used merely to promote U.S. accomplishment in science and technology.

Some people questioned whether environmental education should be integrated into existing curricula or taught as a separate subject. One participant felt that it should not be made adjunct, and fit into an already crowded program in other subject areas. Another participant suggested using land use history as an organizing theme for environmental study. He felt that people need to study the history of their own community in order to care about or understand future consequences.

One panelist said that we will be truly successful when we cannot tell science education from environmental education from quality education. The panelist believed that educators from all disciplines and organizations need to come together to share values rather than look for differences. Another panelist also emphasized the importance of merging interests, and was excited by the partnership opportunities presented by the renewed interest in educational reform.

Should Environmental Education Focus on Presenting Issues and Problems or Should It Deal with Behaviors and Solutions as Well?

A participant emphasized that young people want to focus on solutions. In her program, students are engaged in collecting data and applying it to the community in which they live, participating in such activities as testifying in land use meetings, conducting monitoring, and working with farmers. Another participant, however, wondered how educators could present solutions to complex environmental problems. For some issues, such as solid waste management, there were solutions like recycling, but the solutions of other problems might not be accessible to students.

One panelist was concerned with the solution-oriented approach to environmental education, because it presumes that educators have all of the solutions. The panelist felt that environmental education's role is to make students literate so that they can develop their own solutions. Another panelist agreed that educational programs need to separate evidence from advocacy. A participant supported that view with the comment, "Advocacy not based on evidence is a truly frightening thing to behold." When considering the question of whether to teach evidence or advocacy, a panelist cautioned educators to keep in mind the different roles of different institutions—from schools and universities to environmental organizations.

One panelist thought the most effective classroom education technique was to have students take different sides of an issue, such as drilling for oil in the Arctic National Wildlife Refuge. In a debate, she said, students have to organize their own arguments and really listen to each other. Therefore, they explore all facets of a problem and retain the information. Another panelist agreed that environmental education offers excellent opportunities to apply multiple points of view to both science and social issues.

Some participants still felt that education should push an advocacy position. One thought that much of curricula currently taught, including math and science, could be construed as anti-earth, and that students need to feel they are being affected personally in order to be mobilized to action.

How Can Social Equity in Environmental Education Be Guaranteed?

One panelist stressed the importance of keeping in mind economic and cultural diversity when approaching environmental issues. The panelist felt that we cannot expect people to pay more for environmental quality, but instead must find ways to accomplish more with less money. The panelist suggested that environmental health risk was an issue that provided common ground for all people. Everyone wants zero risk, and no one should have to take the word of scientists and politicians that toxic waste sites and polluted air and water present no risk to their health. People in all communities need to be taught how to access the political process and become decision-makers. Another panelist emphasized that the public should be provided with the information needed to understand risk perception, and then given the evidence to draw their own conclusions.

Another participant raised the issue of people who were not represented at this conference. He stated that although three speakers had quoted Native Americans in their addresses, there was no Indian representation at the conference. He suggested the EPA tribal lands environmental scholarship as a way to get Native American students interested in working on environmental issues for EPA or tribes.

Is a Fundamental Change in Our Method of Instruction Needed?

A common opinion was that educators need to consider a student's whole environment as a classroom, not just the school. One teacher emphasized the need to take advantage of all available resources, including the media. Her classroom learned more about astronomy, for example, from one video—a *New Explorers* segment—than from any textbook. On the same theme, participants suggested looking to community organizations and institutions for educational opportunities and working together to build community unity using the environment as a focus.

One person reminded the group not to overlook the role of organized religions in reaching people with environmental messages. In one weekend in the United States, he said, religious leaders reach more people than all other groups represented at the conference combined. He felt that although many clergy were not scientists, morality is a central issue in the environmental debate and that most of our environmental problems can be attributed to greed or poverty.

Several participants emphasized the need to perceive teachers as professionals and support them directly through grants for projects, equipment, and training. One panelist pointed out that when teachers own their own equipment, rather than borrowing it from the school, they use it more often and share it more often with other teachers. Several participants voiced that teachers need more guidance in how to obtain funds, write grant proposals, and find out about available programs at the state and local level.

In answer to a specific question about grants, an EPA representative explained that each EPA Regional Administrator will set up a panel to review grant applications and may also set up a panel to assist with grant proposal writing. He reiterated that 25 percent of the grants would be for $25,000 or less. The Regional Administrators will also set up their own education strategies and coordinate conferences to involve teachers and all ethnic and economic groups.

Other participants brought up the role of nonprofit organizations, such as Project WILD which has trained more than 300,000 educators, as models for environmental education. One panelist emphasized that teachers who have taken these types of courses are now back in the classrooms spreading their knowledge and skills. Another panelist agreed on the importance of freeing up teachers' time so that they can participate in learning and networking opportunities. Still another panelist said we need to change our attitudes toward teacher involvement and participation, saying that many people still feel, "There is something unclean about a teacher being out of the classroom on a school day."

PANEL 2: SUCCESSFUL PARTNERSHIPS TO DEVELOP AND DELIVER ENVIRONMENTAL EDUCATION GLOBALLY

Moderator: Lynn Elen Burton, Director of Environmental Education
Environment Canada

Augusto Medina, Senior Program Officer
Latin America and Caribbean Program
World Wildlife Fund;
President
North American Association for Environmental Education

Anthony Cortese, Dean
Environmental Programs, Tufts University

Nan Little, Director
YMCA Earth Corps

William Eblen, President
The Rene Dubos Center for Human Environments

Augusto Medina, Senior Program Officer,
Latin American and Caribbean Program, World Wildlife Fund;
President, North American Association for Environmental Education

Purpose

The World Wildlife Fund (WWF) is an international family of organizations composed of 30 national organizations throughout the world including Europe, Asia, Africa, and Australia. The WWF mission is to conserve the diversity and abundance of life on earth and the health of ecological systems. We work toward this goal by:

- Protecting natural areas and wild populations of plants and animals, including endangered species.
- Promoting sustainable approaches to the use of renewable natural resources.
- Promoting more efficient use of resources and energy and the maximum reduction of pollution.

WWF is committed to reversing the degradation of the natural environment, and to building a future in which human needs are met in harmony with nature. WWF recognizes the critical relevance of human numbers, poverty, and consumption patterns to meeting these goals.

One important conservation method that WWF employs in advancing the above objectives is environmental education. WWF supports formal, nonformal, and informal environmental initiatives financially and with technical assistance throughout Latin America and the Caribbean (LAC), Asia, and Africa. We also support educational activities in the United States. Our Communications and Education Department has developed a variety of materials, including a teacher kit on illegal wildlife trade, its impact on endangered wildlife, and the role Americans can play in reducing illegal wildlife trade.

Partners

WWF works with a broad cross-section of individuals and institutions throughout LAC. Present partners include ministries of education, natural resources, and parks; local and regional nongovernmental environmental organizations, regional organizations, and universities and teacher training institutions; civic groups and other community organizations; and individuals such as teachers and other community members.

We recently collaborated with the Smithsonian Institution in a major exhibit, The Vanishing Rain Forest, produced accompanying teacher education materials, and produced the award-winning video, "Rain Forest Rap."

Successes

Our partnerships with local organizations and agencies are essential for WWF's program. WWF does not work within a country unless it is invited and a local core group exists. Success is measured by the ability of local organizations to design, adapt, and maintain their own environmental education programs.

I would like to describe a few of our current projects in Latin America and the Caribbean. In one rain forest area of Colombia, which is being converted to coffee and cattle farming, we are working with a group called Herencia Verde, a nongovernmental organization that has been able to obtain land in the upper peak of one of the mountains. In working to conserve this area, their main thrust has been to bring people to the area to see the tropical rain forest firsthand. They have sponsored a variety of activities, including implementing agricultural practices to reduce erosion and bringing in regional specialists to study the environment at this site.

Another project, which was initiated in Panama and is now continuing in Costa Rica, is looking at a sustainable economic alternative to cattle in Central America. Because iguanas are a popular food, the project is researching the mechanisms for producing iguana as an alternative to cattle, and educating the public about how this type of activity could be implemented. The most important part of the project is working with the local public, since they must play a role in keeping track of the data and harvesting the iguana.

In Brazil, WWF has supported a project to protect the endangered golden lion tamarin. Project components include captive breeding, educational outreach, legislation to protect remaining habitat areas, and enforcement. We started by doing a survey to assess behaviors and attitudes toward the environment and, in particular, the golden lion tamarin. In order for a captive breeding program to be successful, we had to gain the support of the community to ensure the animal's survival once it was released and to guarantee that suitable habitat would be available. Education materials were produced and posted in all areas of the community, including local rum shops. We did classroom presentations, outreach through plays, teacher training workshops, parades, and even games. The local media were very supportive, especially of the captive breeding program and the fact that these captive-bred animals would be released locally into the wild. A wildlife reserve was established specifically for the golden lion tamarin and tours of the reserve were given to the local population.

Lessons Learned

Following are some the things we have learned through our programs in LAC:

- The need for environmental education programs must be identified by the community.
- The involvement of the local community from the start of the program is essential for long-term success. All the major players in the community must have an opportunity to have input.

- Programs must address real needs and assist community members to improve their local condition. Programs must be flexible and respond to changing needs within the community.

- Programs must be able to be maintained by the community using its own resources.

- Training and opportunities for professional enrichment are necessary to retain leaders in the program.

- Programs must evolve (at their own pace) from a shared community experience.

It is important to remember that education is one tool among several used to support conservation. Legislation, enforcement, and other alternatives are critical. It is also critical, with conservation efforts in communities, to look at ways that local resources can be used.

Future

Environmental education is now viewed as an important method for achieving broader conservation objectives. Environmental education must be incorporated into conservation planning as an integral part of the design process. In addition, avenues must be developed for easier exchange of information within the region, and more opportunities for regional training are needed.

Any efforts to promote environmental education should be done in partnership with local organizations. Staff should be ready to communicate in the local language and have sufficient resources and time to learn what has already been accomplished. Many local organizations in LAC are conducting creative and effective environmental education programs. In many cases, the need for technical expertise is not critical. What is frequently in short supply are the resources to conduct programs and network with colleagues.

Excellent opportunities exist for establishing a partnership with the federal government as a result of the new National Environmental Education Act. Cooperation is possible with training, networking, exchanges, and sharing of materials.

In closing, there are a lot of opportunities for partnerships with local organizations throughout Latin America and the Caribbean. It is important, however, to be mindful that we do not have all of the answers. A lot of humility is required when working with international audiences; in fact, they can teach us a few things along the way. Before we go into Latin America, we need to look at our own backyard. We need to think about how we are handling our own resources, particularly with regard to our impact on global conservation as a result of our consumption and waste disposal, and our marketing of toxic products such as pesticides and herbicides to other countries. Looking at ourselves is an important start.

Anthony D. Cortese
Dean, Environmental Programs, Tufts University

Two types of partnerships are critical to the promotion of environmental education globally: the first is cooperation among universities to make environment and development education and research central to their mission; the second is partnerships to promote environmental literacy.

University Support of Environment and Development Issues

In the next 40 years, the world population is expected to double and economic output is expected to increase by a factor of at least three or four. If the rest of the world tried to achieve the standard of living of the United States, it would require five to seven times as much energy as is currently used. If that energy is powered by fossil fuel, the impacts on the environment would be tremendous.

The people graduating from universities today are those who will be making the decisions in government and industry as to whether we will move toward an environmentally sustainable future or whether we will move further toward environmental degradation. There are so many creative programs to train teachers in high school, yet it is the colleges and universities who are training those teachers in the first place. Universities have a profound responsibility to increase the awareness, knowledge, technologies, tools, and values necessary to move us toward an environmentally sustainable future. They have the expertise, and must play a strong role in education, research, policy development, information exchange, and community outreach.

In today's trained workforce, there is a critical shortage of environmental specialists—engineers, scientists, management specialists, health policy specialists, and population specialists. Also, often the people who are trained as specialists are trained only as pollution specialists or natural resource specialists, but almost never as both. They are also usually trained about a single medium or problem, such as air pollution, water pollution, or hazardous waste, and rarely about taking an integrated approach with environmental issues. Finally, these specialists are trained mainly to control and clean up environmental problems instead of anticipating and preventing those problems before they occur.

Environmental studies programs at universities are often thought of as faddish or as being exclusively for K-12 education. Because they are interdisciplinary, environmental studies often are considered to be soft science, not rigorous, and not scholarly. Environmental literacy and environmental education are not a major part of the curriculum of any major university in the United States or any university I know of anywhere. Tufts is trying to change that.

Most of the environmental studies programs at universities are initiated and sustained with outside funding, not with regular tuition funding. It seems strange that, if population, economic activities, and the environment are some of the most important and complex issues for society, they are not a central part of university teaching and research. I believe there are two reasons. First, universities are organized along the principles of the German model of education, which we have adopted and perfected in the United States. In this model, all knowledge is divided into discrete disciplines, such as biology, chemistry, physics and economics. The second reason is that faculty, not administrators, control tenure, promotion, curriculum, and degree requirements at universities. At most major universities, research is emphasized over teaching. Quality research is often defined as original work in a single discipline. Often, departments recommend that faculty not do research that is interdisciplinary if they want to be recommended for tenure. As the President of Tufts, Jean Mayer, likes to say, "We learn more and more about less and less, until at some point, we know everything about nothing."

Also, individual contributions are rewarded over team efforts, yet as most of us have experienced, out in the world, we have to work together to solve problems. From the time we are in kindergarten to the time we get through universities, we are encouraged to excel and compete with others, rather than to cooperate to solve problems.

Many times the presidents and deans, who often have the broadest and most integrated view of societal problems, have little to say about academic direction. To promote executive input, Tufts President, Jean Mayer, convened 22 presidents, rectors, and vice chancellors of universities from all over the world at the Tufts European Center in Talloires, France, in October 1990 to consider the role of universities, and especially university presidents, in environmental management. Assisted by internationally respected environmental leaders, the presidents explored the current state of the natural environment, the impact of human population growth and economic activity on the environment, and strategies for the future. They also discussed the role of education, research, policy formation, and information exchange in managing the human impact on the environment.

From this conference came the Talloires Declaration, a statement of the group's intent to place their institutions at the forefront of the effort to solve environmental problems and a challenge to their colleagues worldwide to join them. The declaration has been signed by 125 presidents from 32 countries to date, including 45 from Brazil. Tufts hopes to create a secretariat to support presidents in this initiative and to expand the network of those subscribing to the Talloires Declaration.

Tufts Environmental Literacy Institute (TELI)

Tufts University has agreed to have all of its graduates be environmentally literate and responsible. As President Jean Mayer describes the university's goal, "By ensuring that all our graduates are environmentally literate, Tufts is producing professionals who will help make our productive sector and governments more efficient in the use of natural resources and energy and reduce adverse impacts of their activities on society."

To that end, Tufts University, together with Allied-Signal Inc., has embarked on a project to develop the intellectual capital essential to ensuring an environmentally sustainable future. In April 1990, Tufts President Mayer and Allied-Signal Chairman Edward L. Hennessy, Jr., announced the formation of the Tufts Environmental Literacy Institute (TELI). TELI is the nation's first comprehensive environmental education program integrating environmental issues into undergraduate, graduate, and professional school curricula.

Allied-Signal, Inc. provided the initial $150,000 2-year grant for the design and implementation of TELI. In addition to its financial contribution, Allied has contributed as an advisor, instructor, evaluator, and promoter of TELI. Further support for the program was received from the U.S. Environmental Protection Agency.

TELI is a faculty-based program aimed at enabling Tufts faculty across all disciplines—engineering, business, social sciences, humanities, medicine, and international law and diplomacy—to incorporate environmental perspectives into the courses they teach. In this way, Tufts students are empowered to become environmentally literate and responsible citizens through broad, continuing, and repetitive exposure to environmental issues throughout their educational experience. TELI facilitates the process of faculty development by providing financial and intellectual support, as well as access to resources, information, and environmental experts. Through a series of workshops, seminars, and meetings, the goal of TELI is to develop and augment the environmental knowledge and skills of the Tufts faculty, and to assist them in revising their curricula to include environmental information and perspectives.

The Tufts program doesn't train teachers; faculty are already well trained. We further develop their capability to understand new issues and perspectives. So far 60 faculty members from Tufts and 10 from other universities have gone through a 2-week intensive workshop and have begun to revise their courses to include environmental issues and perspectives in subjects ranging from mechanical engineering to history to drama. As a result, over 1,500 students have received or will receive environmental information in over 30 traditionally nonenvironmental courses. The 5-year TELI goal is to serve 500 faculty, one-third from Tufts, one-third from other northeastern U.S. universities and high schools, and one-third from developing countries. In doing so, TELI will reach 75,000 to 100,000 students during their academic careers.

Though TELI began at Tufts, the intent of the institute is to transfer the model and its resources to other universities through dissemination of course revisions and curricula materials, and by training trainers to establish similar institutes at their own universities.

In January 1991, I traveled to Brazil to meet with colleagues from the University of Brasilia and Monte Grosso and the University of San Paolo to help establish an environmental literacy institute in Brazil and to connect all of their universities by information-sharing networks.

As an environmentalist from Senegal said, "In the end, we will conserve only what we understand, we will understand only what we know, and we will know only what we are taught or learn." What we are trying to work toward with this program is connections. People need to connect their professions to the environment and TELI hopes to further this goal.

Nan Little
Director, YMCA Earth Corps

Purpose

The purpose of YMCA Earth Corps is to train young people to be effective global citizens by teaching leadership skills through environmental education and action. The primary target audience is high school students. However, because we teach young people how to take action by building community consensus, our secondary audience is the diverse community at large. Our expectation is that the skills our students learn will be translated into all areas of global citizenship.

YMCA Earth Corps is composed of four basic elements: education, leadership training, action projects, and international exchange. *Education* takes place through interactive symposia, in which professors and community experts teach classes on scientific aspects of the environment. Classes are followed by interactive simulations in which students are given a real problem related to the scientific issue they have just studied. Small groups of students role play each point of view and present their "case" to a board of hearing examiners. The hearing examiners teach the students the principles of win/win negotiation and challenge the students to negotiate a settlement that values all points of view. Experiential classes are also held at the National Oceanic and Atmospheric Administration (NOAA) facility, where YMCA Earth Corps teacher advisers and NOAA scientists create interactive classes using this research center.

Leadership training occurs at Leadership Weekend Retreats, where students learn about leadership styles, elements of programming and planning, how to run effective school clubs, and how to take on major action projects. Students continue building leadership skills in school clubs and through implementing major community projects, such as urban tree planting.

Action projects are chosen by students and carried out at the school and community levels. They include stencilling storm drains; adopting streams, beaches, and highways; establishing school recycling programs; monitoring watersheds; implementing beach and other area cleanups; creating activity books to teach about water, transportation, and tree planting; and hosting community education days. We also have "all area projects," such as planting hundreds of trees on Earth Day or constructing a major park.

International exchange projects have included raising money for scholarships, hosting international students, and traveling abroad.

Partners

YMCA Earth Corps is a collaboration of students and teachers from public and private schools coordinated by the YMCA and supported by business, government, institutions of higher education, and other not-for-profit organizations. The YMCA is responsible for organizing the program, training staff and students, and generating community support. The teacher advisors support the school clubs, provide the intellectual base for science projects, and handle in-school logistics. Students run the school clubs, decide on major projects and implement them with the support of the general community, raise funds, and recruit other students. Because the YMCA is active in over 100 countries, it is relatively easy to arrange international exchanges and action programs.

Our support partners help fund the program and provide the expertise for a solid educational background on environmental issues for the students. Since we feel it is critical that we present as many sides of each issue as possible, it is not unusual for our sponsors and co-presenters to actually be in court against each other on other days.

Without corporate and governmental support, we would not have a program. Programs for students cannot be fee based since young people don't have enough money. The major sponsors for the Seattle YMCA Earth Corps are the Boeing Company, GEO, and the State Department of Ecology, along with many smaller donors. Students raise a significant amount of money, especially for training and exchange programs. If such programs are valued by the community, they must be supported by the community.

Our international partners are always other YMCAs. We share our mission and goals for the trip with the host YMCAs and then work together to identify the activities required to reach those goals. Our mission is to share the YMCA Earth Corps program in a context that will be appropriate for the host country. Our goals are to learn as much as possible about the host country—its history, politics, economics, culture, and how those factors affect its environmental attitudes and policies. We want to get to know students; share experiences, concerns, and lifestyles; and have a great time. We want to eat new foods and learn how to dance and play games. We want to learn about what they care about and how they act on what they care about.

Although we have a common heritage of programs developed by youth for youth, each country has a different emphasis both within the YMCA movement and within the indigenous culture. We make every effort to be sensitive to other points of view.

Partnerships are critical to the success of the YMCA Earth Corps. Without corporate, government, and community partnerships, our students would be members of just another school ecology club, focused on a single issue without understanding the greater context or being able to effectively mobilize resources to make a difference.

Successes

In YMCA Earth Corps, high school students are able to provide a safe place for students and adults who wouldn't normally have any contact with each other, and who might even be afraid of each other, to work together on common goals.

The international partnerships are essential for young people to understand and evaluate the American perspective in the context of the global community. It is too easy to look at global environmental problems through the limited lens of our own experience and to either criticize or applaud based on our own myopia.

We measure success through standard indicators: program growth from 13 schools and 270 students to 45 schools and 1,500 students in the Seattle area, expansion throughout our state and to other states and abroad, the number of projects initiated, and the dollars raised.

The real indicators, of course, are the students themselves, such as the loner who came to a leadership weekend to meet girls and ended up leading the Earth Day project, who said to me at the project's conclusion,

> You know, Nan, I was terrified when I realized what I had gotten myself into. I didn't have any skills and I knew I couldn't do it. But day by day you just stuck with me, and pretty soon I learned how to organize a meeting, give a speech, pull people together. I never believed I could do it, but you believed in me. And because you believed in me, I kept on trying, and finally I started believing in me and I knew I could make a difference. I'll never be the same. I'll never go back to letting someone else do it. Thanks.

Or the boy who was diagnosed with leukemia at age 12 and went through 3 years of chemotherapy followed by deep depression and substance abuse. He went through Outward Bound, AA, and from being an A student to barely making it. Then, he joined YMCA Earth Corps, is now the leader of his school group, went on the Asian trip, and gave a closing speech in Japan. Most recently he gave the dedication speech at our October tree planting. He talked about his YMCA Earth Corps family and how it had given him life by allowing him to build bridges in the community. He made his own choices, but we provided a vehicle for his concerns and encouraged him to use his voice.

At an Earth Corps symposium, I spoke with the Vice President of Timberlands for Weyerhaeuser, not the most popular corporation in the home of the spotted owl. I asked him what he thought about what we were doing, and he answered, "You know, Nan, you're not teaching these kids environmental skills here. You're teaching them life skills, skills they'll use in their marriages, their jobs, community service, raising children, being global citizens."

Lessons Learned

The elements of international exchange are applicable to dealing with all kinds of partnerships, whether with teenagers, corporations, or government agencies. We've done two international environmental exchanges so far. The first was hosting students from Thailand, India, and Japan, who came to the United States to celebrate Earth Day 1990 and stayed for 2½ weeks for a very intensive environmental education program. The second was in the summer of 1991, when we took 16 students to Hong Kong, Singapore, Malaysia, and Japan for 3 weeks.

The first element we learned about was communication. When we brought these students to the United States, we understood what we wanted to communicate: we wanted to share Earth Day with them, to learn about environmental issues in their country, and to develop joint partnerships so young people could work together. What we did not do was ask the foreign students what their goals were. The students from India and Northern Thailand were very interested in environmental issues and brought all kinds of materials and examples of what they were doing. The students from Japan wanted to go into hotel management and they wanted to learn English. The students from Bangkok were very wealthy, pampered youngsters who were used to being transported in their chauffeured vehicles, and they came to shop. We learned that you must communicate before you have an international program.

The second element we learned was preparation. Before you go abroad or host anyone to come to the United States, you should study their culture, their economics, their history, their politics, their language. Before going to Singapore, we met every Thursday evening for 2 hours over a 2-month period, and we held a weekend retreat on the 7th floor of the YMCA. We learned about each other's values, so that when we were in a difficult situation, we knew who we could count on for what. We learned a lot about environmental issues, we learned about Earth Corps, and we learned how to express everything we knew in all kinds of media because we were not sure of the language capabilities of the students we were visiting, and we were well aware of our own language deficiencies.

The third principle we learned was, "80 percent and go"—the principle of flexibility. If you decide exactly how you want something to go, you can rest assured that it won't go that way and whatever happens will be a lot better than what you planned in the first place. So don't bother planning the whole thing before you go—just get about 80 percent there, take off, and be flexible.

The most important lesson is to listen before you assume you have a solution to someone's problem. This relates to corporate partners, international partners, and especially to young people. Young people are not accustomed to being listened to, so it takes time and skill to build the trust that allows them to talk. Likewise, representatives from other countries are not accustomed to being listened to by Americans. Even in the receptive environment of the YMCA, there are historical issues that color every interchange.

Also, we learned to be clear about our own mission and goals. Are you going to another country with the answers to their problems or with honest questions in hand? Make sure that there is a sense of equality about the exchange, that you are sharing in a framework of mutual respect and reciprocity. Whenever possible, work with indigenous people rather than individuals from your own country who happen to be stationed in a foreign country. The YMCA is an association of individual programs, each designed and operated by their own communities. There is very little top-down management and all individual YMCAs are directed by indigenous people.

Future

YMCA Earth Corps continues to expand nationally and internationally. It has been adopted by the U.S. YMCA as a national model. This type of program has started up in five other states, with other programs in inner cities. We have applied to a major foundation for a grant to start a national resource center which would provide training and program support for YMCA staff, students, and teachers.[1] Our partners have all made a commitment to sustained and increasing support.

Internationally, we plan to take a group of students, up to 33 altogether, to the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, in June 1992, to share the program and to learn about other youth activities in the environmental movement and about environmental issues in Brazil's urban and jungle settings. We plan to participate in the conference, then travel through Brazil, helping to start the program and learning more about both urban areas and Amazonia. This is a kind of life-changing experience that these students will never forget.

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[1] Earth Corps recently received this 4-year grant from the Kellogg Foundation.

We also would like to have a partnership with the federal government that would support the national expansion of YMCA Earth Corps by providing some base funding for the Seattle program and startup grants for new programs whose staff have been trained by the Seattle trainers.

William Eblen
President, The Rene Dubos Center for Human Environments

Background and Purpose

The Decade of Environmental Literacy launched last year by The Rene Dubos Center for Human Environments in cooperation with the United Nations Environment Programme (UNEP) was the culmination of some 20 years of a successful partnership. The Center emerged in 1975 from a collaboration between Rene Dubos, a world-renowned scientist/humanist and professor emeritus at the Rockefeller University, and Total Education in the Total Environment (TETE), an independent, nonadvocacy education and research organization I established in 1964 when I was K-12 curriculum coordinator in the Wilton, Connecticut, public school system. I selected human ecology as the unifying concept for the curriculum because, even though I was a science education specialist, I am the product of a broad liberal arts education. After 16 years in the classroom, I was disenchanted with the fragmentation and compartmentalization of education and was seeking an interdisciplinary approach.

The total environment approach I had in mind called for a teaching process that fostered community involvement, relevance, and diversity. This was 6 years before the first Earth Day. Poverty, prejudice, polarization, and conflict seemed as much a part of that approach as pollution and population. As we pursued this approach, we realized that human ecology includes a perspective, a philosophy. It requires more than understanding the natural ecosystem; it requires an understanding of the human ecosystem, and most importantly, the human *ego*system. The need for a social and humanistic approach to environmental problems was obvious then and is even more so today.

The TETE methodology was cited as one of two case studies by the U.N. Conference on the Human Environment in Stockholm in 1972. It was also field tested by UNEP in 1974 at their first seminar on environmental education. This seminar, held in Kenya, involved six East African nations, and was co-sponsored by the World Confederation of Organizations of the Teaching Profession, representing 5 million teachers in 90 countries. My wife, Ruth Eblen, Executive Director of the Center, and I were introduced to Rene Dubos in 1974, as a result of that seminar.

Dubos' ecological view led to his early understanding of the need to study bacteria in the soil where they live, rather than in petri dishes in the laboratory. Through his work, he discovered a systematic method for producing antibiotics on a large scale. Dubos discovered that microbes adapt to their environments by actually changing them, and he concluded that the same process must apply to all living things, including humans. That ecological view led to his role in the Stockholm conference in 1972. Commissioned to chair the committee of experts, Dubos insisted that the conference title include the ***human*** environment.

In conceptualizing the Center, Dubos said "whereas other organizations deal with the protection of the environment, the organization we should establish will complement the defensive policies of the environmental movement by emphasizing the creative aspects of human interventions into nature." The Center's practical purpose is to help the general public and decision-makers formulate policies for the resolution of environmental conflicts and for the creation of new environmental values. Dubos became chairman of the Center in 1975, formulating its socioenvironmental philosophy and directing all of its programs until his death in 1982.

The Center considers the interplay between human beings and their environment from two complementary points of view. First, human beings always transform the environments in which they live and function. In fact, practically all inhabited environments are artificial in that they have been profoundly altered by human culture. Second, human beings are shaped by the environments in which they develop. Each culture reflects the influence of the environment in which it has been created and has evolved. The following quote by Rene Dubos perhaps best summarizes this philosophy: "The earth is to be seen neither as an ecosystem to be preserved unchanged, nor as a quarry to be exploited for selfish and short-range economic reasons, but as a garden to be cultivated for the development of its own potentialities of the human adventure."

Dubos developed four themes for the Center that have influenced environmental decision-making throughout the world:

- "Think globally, act locally." Whereas most important problems of life on earth are fundamentally the same everywhere, the solutions to these problems are always conditioned by local circumstances and choices.
- "Trend is not destiny." Whereas biological evolution is irreversible, social evolution makes it possible for human societies and individuals to change their course, and even to retrace their steps when they judge that they're moving in an undesirable direction.
- "Optimism despite all." Despite constant present tragedies, we can have faith in the future because human life and nature are extremely resilient and because we are learning to anticipate the dangers inherent in natural forces and in human activity.
- "Learning from success." Since there are countless ways to go wrong, and only a very few ways to do right, our best chance to deal successfully with our contemporary problems and those of the future is to learn from the success stories of our times.

"We have far to go," Dubos said, "before understanding all the subtleties of the complex interrelationships between people and their environments, but we can at least begin to analyze them in terms of several categories that we refer to as, 'the five E's' of environmental management: ecology, economics, energetics, esthetics, and ethics." These underscore the fact that technological solutions to socioenvironmental problems cannot be successful without concern for their humanistic aspects.

Partners

The Center collaborates with different institutions to increase environmental literacy in the schools, in the workplace, and in the community. It continues to conduct a forum program that involves authorities from as many different vantage points as possible, to acquire and integrate information on environmental problems for dissemination. Since 1977, Dubos forums have involved

2,000 decision-makers; scholars; scientists; and leaders from business, industry, government, media, and special interest groups representing approximately 500 organizations, both national and international.

Some of the strategies for developing additional partnerships, especially with federal programs include:

- Establishing environmental literacy resource centers as part of an international network, utilizing the environmental library and archives of Rene Dubos at the Center in New York City.
- Conducting environmental literacy workshops in each of the 10 EPA Regions for representatives of each state to plan followup workshops to establish literacy resource centers.

The Center has developed tools that may help other organizations and agencies guide their environmental literacy efforts. First, the Center has selected a hierarchy of behaviors that can be used to determine a person's level of environmental literacy, which include proficiency in value clarification, decision-making, and problem solving. The Center also has been developing criteria based on guidelines established by Dubos that can be used to determine the degree to which educational resources contribute to improving environmental literacy.

Successes

Following are selected projects under way to advance the goals of The Decade of Environmental Literacy:

A Multimedia Computer Applications Series in Environmental Literacy

The Center, in partnership with the Center for Educational Computing Initiatives (CECI), Massachusetts Institute of Technology, is developing a multimedia computer applications series through the integration of text, graphics, video, audio, still images, and simulations to enhance the users' understanding of environmental issues and of the complex interactions that need to be considered in making informed decisions about environmental problems. This multimedia computer software series will provide an ideal educational tool for environmental literacy for a wide range of users in K-12, college, and corporate training. The Center is drawing upon its philosophy, educational resources, and clearinghouse capabilities, including its extensive network of authorities; CECI is providing the technological expertise in computers and multimedia.

The Environmental Literacy Series

The Center, in collaboration with The Center for Risk Communication, Columbia University; The Division of Environmental Sciences, Columbia University; and The Institute of Environmental Medicine, New York University, is developing a new and comprehensive environmental literacy program that will complement existing curricula through the examination of current environmental problems. The five core units are *Think Globally, Act Locally: An Overview*; *Basic Environmental Concepts and Facts*; *Introduction to Risk Assessment, Management, and*

Communication; *Introduction to Environmental Health*; and *Introduction to Policy and Environmental Law.* Additional proposed topics include *Introduction to Energy, Introduction to Pesticides, Introduction to Waste Management*, and *Introduction to Biotechnology*. Over a 2-year period, the five core units will be developed, reviewed, field-tested, and revised for publication; and teacher training workshops will be conducted for pilot teachers. Each unit will consist of a text, an instructional guide, a learner's manual, and audiovisual materials.

The Encyclopedia of the Environment

The Encyclopedia of the Environment, directed by the Center to be published by Houghton Mifflin Company in 1993, will be the first comprehensive one-volume encyclopedia on the human environment for the general public that through its breadth of coverage, balance of perspective, and expertise of its contributors provides the common ground and standardized language needed to understand the basic socioenvironmental terms, concepts, issues, and problems.

The Future: The Environmental Literacy Summit and Related Activities

On May 6, 1992, the Center will convene an Environmental Literacy Summit at the United Nations Headquarters in New York City. Noel J. Brown, Director, North American Office, United Nations Environment Programme, and Gerard Piel, Chairman Emeritus, *Scientific American*, will co-chair the forum. The event will commemorate the 20th anniversary of the Stockholm Conference and pay tribute to Rene Dubos on the 10th anniversary of his death. The focus will be on four major issues: 1) Demographic Transition, 2) Food Supply, 3) Energy, and 4) Equity and Economic Development. World authorities will prepare agendas for action based on the answers to two key questions:

- What do people need to know in order to make informed choices about, and take specific actions on, the four issues?
- How can the process of educating people for environmental literacy be improved?

Findings from this conference will be shared at the United Nations Conference on the Environment and Development in Rio de Janeiro in June 1992.

The programs and related activities planned for the Decade of Environmental Literacy will complement and reinforce the national and state goals articulated by the U.S. Department of Education's America 2000 Program, U.S. EPA's Pollution Prevention and Environmental Education Programs, and the U.S. Department of Energy's science education efforts. Some of the important goals these programs share are:

- Improving literacy and numeracy.
- Encouraging partnerships, especially between schools and business and industry.
- Emphasizing learning from success.
- Increasing the development of responsibilities in communities for the quality of life.

- Stimulating efforts both within and between individual states.

Some of the features of environmental literacy programs we would like to see in more environmental education efforts are:

- Contributing to the development of a core knowledge base and a standardized language to provide common ground for making informed choices and taking action.
- Emphasizing examining values and challenging faulty assumptions, especially about unresolved issues.
- Focusing on changing the behavior of individuals in local activities that ultimately have global implications for sustainable development.

According to the latest surveys, only 11 percent of the national population are "true-blue greens" (environmental leaders or activists). Eight out of 10 people recognize the need for substantial and profound shifts in their own lifestyles but are not yet willing to make sacrifices for a better environment. Environmental literacy is not limited to science literacy, especially when developing an ethic that encourages environmentally responsible behavior. In the final analysis, the success of all environmental education efforts will be measured in terms of their ability to change the behavior of society.

Panel 2: Question and Answer Session

Successful Partnerships to Develop and Deliver Environmental Education Globally

Moderator: **Lynn Elen Burton, Environment Canada**

This question and answer session opened with participants identifying themselves and their interests in attending this particular session. Some of the goals participants cited included:

- To learn about other peoples' programs and to look for ways to form partnerships.
- To get ideas for developing materials for international distribution.
- To break down barriers in the scientific community and encourage the scientific community to play a more active role in environmental education efforts.
- To find ways to integrate public environmental health issues into environmental education.
- To find ways to tie environmental education to the United Nations Conference on the Environment and Development (UNCED).
- To expand environmental education programs into the international arena and to further develop existing international programs.
- To learn about sources of funding.
- To expand a network of contacts.
- To look for good model programs.

Three of the panelists then shared their thoughts about how their own environmental education programs exemplified certain values and goals. Nan Little emphasized that one of the strengths of the YMCA Earth Corps is that it is student directed, with YMCA providing support to student initiatives.

Gus Medina underscored World Wildlife Fund's use of partnerships with organizations such as U.S. Agency for International Development, Peace Corps, and CARE. He explained that World Wildlife Fund both gives grants and receives donations from private sources, government, and foundations.

Tony Cortese, of Tufts University, shared his belief that environmental education should emphasize the natural environment as the source of our living and our quality of life. He stressed that without a healthy planet neither social nor economic life are possible in the long term. He also felt that one of the most important concepts in environmental literacy is the interrelationship of all living and nonliving things.

The discussion of panelists and participants throughout the rest of the session focused on the importance of teaching about interrelationships, especially the relationship among health, pollution, and the economy.

The session closed with a summary of upcoming environmental education events and activities, including:

- Globe '92, an international fair to take place in Canada in March 1992.
- The Environmental Literacy Summit sponsored by the United Nations Environment Programme (UNEP) in May 1992.
- The United Nations Conference on Environment and Development to be held in Rio de Janeiro, Brazil, in June 1992.
- The World Congress for Education and Communication on Environment and Development (ECO-ED) being sponsored October 17-21 in Toronto, Canada, by the North American Association for Environmental Education and other organizations.
- The Tri-Lateral Memorandum of Agreement for environmental education among Canada, Mexico, and the United States.

PANEL 3: SUCCESSFUL PARTNERSHIPS TO FINANCE ENVIRONMENTAL EDUCATION

Moderator: Kathy McGlauflin, Vice President for Education and
Director of Project Learning Tree
American Forest Foundation

Thomas Benjamin, Staff Director
Alliance for Environmental Education

Valerie Williams, Educational Services Supervisor
Southern California Edison

Annette Berkovits, Director of Education
Bronx Zoo
Chair of Education, New York Zoological Society

Madeline Strong, Executive Director
Florida Advisory Council on Environmental Education

Thomas Benjamin
Staff Director, Alliance for Environmental Education

Corporate programs to teach individuals about the environment are neither new nor unique. Throughout the history of the United States, corporations have had a direct responsibility for the use and sustainability of the resources on which they depend. Throughout history, individuals have been concerned with the apparent destruction of our resources and have constantly held corporations responsible for their obvious direct impact on these resources.

At a meeting held in Philadelphia, the following figures were presented: "Currently, the forest covers about 450,000,000 acres or about 25 percent of the area. Of this, not less than 25,000,000 acres are cut over annually, a rate of destruction that will bring our forests to an end in 18 years." Is this a quote about the current situation of our tropical rain forests? Is this some statement of scientific merit that we should learn more about? Actually, it was taken from the *Arbor Day Manual, an Aid in Preparing Programs for Arbor Day Exercises*, which contained information on how to use Arbor Day activities in music, art, history, science, and other subjects. It was printed as a result of publishers getting together with the superintendents of the Normal Schools (teacher education colleges) in the state of New York. This quote comes from a report of the Forestry Congress about the state of forest lands in the United States in November 1889, over 100 years ago.

What does this have to do with corporate fundraising and environmental education? Today we have established a network to support education programs, environmental programs, and other programs across the country, which are starting to depend on sources other than just tax dollars. Such programs must turn to foundations, corporations, and individuals. For example, the National Tree Foundation is supported by an Act of Congress and many corporations. In 1990, the National Fish and Wildlife Foundation generated over $40 million in grant commitments. Over 50 major corporations have provided direct assistance to over 365 conservation projects. The National Environmental Education and Training Foundation chartered by Congress under the National Environmental Education Act takes public funds and actively seeks corporate and other funding sources to match those dollars. Times Mirror Magazines was the first corporation to provide funding for this new foundation. Environmental organizations from local to international groups are forming partnerships with corporations to support mutually beneficial programs.

Many companies have taken the lead not only in providing cash to worthwhile programs but also in incorporating major environmental training programs to institutionalize a pro-environmental approach into all aspects of their companies. Dow Chemical, AT&T, Centel, Phillips, UPS, Apple Computer, Chevron, Warner Bros., Walt Disney, and Procter & Gamble are just a few of the many hundreds of examples of active corporate programs to educate employees, become involved in environmental education efforts in communities, and improve corporate image.

Corporations form partnerships to promote environmental education for many reasons, some of the most obvious being to increase sales or enhance their image. Many companies, however, claim they do it because they truly care about the environment and want to make a statement and a difference. A recent survey by Michael Peters Design, a New York marketing firm, found that 89 percent of U.S. consumers are concerned about the impact on the planet of products they buy, and 78 percent say they are willing to pay more for "environmentally benign" products.

Corporations, however, often have difficulty determining the right course of action. Regulations that were promulgated 5 years ago are already changing; policies and procedures that were appropriate then are no longer considered environmentally sound. Corporations are looking for ways to improve their own processes and to have a positive impact on their communities and on the world.

Today, many corporations are working with nonprofits. The Conservation Treaty Support Fund, a small nonprofit organization, recently raised over $60,000 from a portion of the proceeds from a sale of a Robert Bateman print through Mill Pond Press. This project enhanced the sale of the prints for the corporation and at the same time generated revenue for international environmental efforts. This type of cause-related marketing can enhance a corporation's product and raise funds for worthy causes. Nonprofits today sell the right to use their logo on almost any kind of product imaginable. World Wildlife Fund uses its panda logo to raise millions of dollars from merchandisers who wish to associate their products with the world's efforts to save wildlife.

Today corporations are more likely to negotiate their donations than to give freely with no strings attached. Also, a corporation is more likely to act as a conduit, collecting money from the public and then giving it in the name of the corporation to the charity. A good example is the recent program developed by Ramada International and American Express, along with the recipient, the Nature Conservancy. Each time someone stays at a Ramada and uses his or her American Express card, one dollar is donated to the Nature Conservancy to purchase a piece of land. With this one promotion, the Nature Conservancy estimated they would raise $100,000, but they actually raised over $1 million. This program has given good publicity to all parties, and the environment is the ultimate winner.

Major promotions like this are becoming more common and will be the key to many large corporate donations of the future. Tonight the Alliance, in cooperation with the U.S. Environmental Protection Agency and Warner Brothers, will be announcing a major agreement that could potentially become the largest coalition of corporations ever formed in this country working together to support environmental education. Under this partnership, Warner Brothers will launch "Tweety's Global Patrol," an environmental education campaign featuring one of Warner Brothers most well-known characters to promote environmental awareness and responsibility among a widespread audience of animation fans, from elementary school children to senior citizens.

Valerie Williams
Educational Services Supervisor, Southern California Edison
Think Earth Program

Background and Purpose

Southern California Edison serves over 10 million customers over a 50,000 square mile service territory. It is also our job to serve the over 5,000 schools and universities within that area. In Southern California, we have some particularly acute environmental challenges, such as having one of the worst smog problems in the nation.

One of the things that has been happening in corporations throughout the country is that the teenagers and college students of the 1960s and '70s are now entering management and senior management positions. A few years ago, a man by the name of John Bryson came to work for Southern California Edison. In 1969, Mr. Bryson, with six fellow staff members of the *Yale Law Journal*, founded the Natural Resources Defense Council, a group that serves government and businesses in behalf of environmental causes. Mr. Bryson is now the Chairman of the Board at Southern California Edison, and has called upon each employee to take up the environmental challenge.

Many of our recent projects reflect this effort. Southern California Edison recently made an announcement about new photovoltaic cells we are developing in conjunction with Texas Instruments, which may cut costs in half. We are also developing an endangered species program, in which we would share our knowledge with other utilities and industries about the importance of causing as little impact to our endangered plants and animals as possible. We are also working with teachers in this area.

A few years ago, a group of Southern California companies decided to put our thoughts and actions together to make a difference. The result is *Think Earth*, an environmental education program geared for schoolchildren in grades kindergarten through six. The goal of this program is to help children learn to "*Think Earth*"—to conserve natural resources, reduce waste, and minimize pollution. Children learn basic environmental concepts, such as the fact that everything comes from the environment; skills, such as identifying recyclable products; and behaviors, such as saving newspapers to recycle. The program promotes an environmental ethic in which students balance human and environmental needs.

Think Earth consists of seven complete instructional units for kindergarten through sixth grade. To date, the units for kindergarten through third grade have been field tested and distributed to schools. Units for grades four through six are currently being field tested and will be ready for distribution in 1992. Materials include full-color story cards and posters, tests, practice exercises, home activity sheets, teachers' guides with lesson plans, and videos. For K-3, a 7-minute animated video with dialogue and musical background has been very well received by students in English-as-a-Second-Language classrooms. At the fourth through sixth grade level, two 15-minute videos have been successful in getting students' attention and tuning them in to environmental issues.

Partners

Think Earth began in 1989 when a consortium of companies, government agencies, and educational organizations in Southern California joined together to develop and provide an environmental education program for elementary schools. The consortium's members represent a broad environmental spectrum: water agencies, air quality boards, electric and gas utilities, an oil company, sanitation districts, a state energy commission, and, the most important component, environmental educators and curriculum developers. Educators make sure the materials are unbiased, educationally sound, and in compliance with the California guidelines in math, science, and environmental areas.

The sponsor members include Arco, the California Energy Commission, the City of Los Angeles Clean Water Program, Educational Development Specialists, GTE California, Los Angeles Department of Water and Power, Metropolitan Water District of Southern California, Orange County Sanitation District, Regional Interutility Network, Sanitation Districts of Los Angeles County, South Coast Air Quality Management District, Southern California Edison, Southern California Gas Company, and the Ventura County Air Pollution Control District. The educator members include representatives from University of California, Los Angeles Extension Services; Sierra Club; California Museum of Science and Industry; Los Angeles County Office of Education; California State Polytechnic University, Pomona; California State University, San Bernardino; Los Angeles Unified School District; and Eco Source International. The consortium's sponsor members fund the development of *Think Earth* and work with educator members to develop and distribute the *Think Earth* materials.

Each sponsor member contributes $25,000 when joining the consortium. Seven sponsors joined initially; the consortium now has 20 sponsor members. The monies raised from contributing members has been used to develop the K-6 curricula. One of the sponsor members, Educational Development Specialists (EDS), develops and reproduces *Think Earth* for the consortium. Sponsor members also contribute from $2,500 to $7,500 annually (depending on the size of the sponsor's service area) to continue to reproduce and distribute *Think Earth* materials free of charge to schools throughout Southern California.

The consortium's meetings and activities are directed by two co-chairpersons elected by the group. EDS administers the funds for the consortium.

EDS also markets *Think Earth* to similar companies and agencies throughout the United States who wish to provide these materials to schools in their service areas. A portion of these national sales is returned to the consortium to help finance its continuing efforts in Southern California.

Successes

To date the consortium has provided *Think Earth* materials to 2,000 elementary schools. Thus, more than 300,000 students learned to *Think Earth* during the first 6 months of distribution. Within 5 years, the consortium expects to reach more than 3 million students in Southern California and millions more nationally.

Extensive measurement and monitoring has surrounded the development and the implementation of the *Think Earth* program. During the first field testing of the program, conducted in May 1990, students showed an increase of knowledge from little knowledge before the program to mastery-level attainment of program outcomes after instruction. Another field test is under way to monitor responses to the grades 4-6 curriculum.

Lessons Learned

It is possible to put together a diverse group of organizations to achieve a common goal.

When soliciting for company involvement in consortia, it is important to have a clear vision of what you want to achieve and clear guidelines for participation. It is also important to choose companies and agencies that have a vested interest in the communities in which they do business, as well as companies that have a history of project completion and followup.

Future

New members for the consortium are actively being sought. With each new business that comes on board, there is an additional $25,000 in funding that can be used toward materials for schools.

Annette Berkovits
Director of Education, Bronx Zoo
Chair of Education, New York Zoological Society

Background and Purpose

Once upon a time, in a land of glass and concrete, there were some lovers of nature who saw the excitement on the faces of children when they were exposed to the beauty of living animals; not the kind of animals seen in books or on television screens, but the noisy, three-dimensional animals children could see, hear, and smell. These people had the funny idea that by bringing children out of their stuffy classrooms and showing them the beauty of nature first-hand, the children might turn into grownups who cared about wildlife. But these strange people carried this idea even further. They thought that once the children became excited about discovering nature and asking questions, they might become scientists. Strangest of all, these naive people wished for a good fairy to bring them a million dollars to turn the children into conservationists.

Lo and behold, one day a fairy did appear. But instead of the million dollars, she gave the zoo educators magic books containing funding guidelines and told them that with some luck these could be shaped into a golden goose. The zoo educators pored over these books for hours, days, and months. They followed carefully all the recipes for turning their ideas into dollars; occasionally they sprinkled fairy dust made of creative ideas into the potion. Many months passed. The zoo educators worried, but they did not despair, for they knew that somewhere—over the rainbow—there were intelligent reviewers who would see the wisdom of the ideas in the proposal. And so, when 9 long months passed, the golden goose laid an egg containing $375,000. From that day on, more proposals brought more money until, in the end, the zoo educators had more than a million dollars.

This is the story of Project W.I.Z.E. (Wildlife Inquiry through Zoo Education), the very first zoo curriculum project funded by two federal agencies, three foundations, and one corporation for national dissemination.

Project W.I.Z.E. is a multimedia life science curriculum that enables students in grades 6 through 11 to embark on an exciting voyage of discovery into the future of wildlife. Combining classroom study with the unique scientific resources available in modern zoos, W.I.Z.E. challenges students to address wildlife survival issues of global scale. Field trips to out-of-school wildlife resources form the centerpiece of this program and help show students how nature works.

Successes

Today, a full decade after the initial program idea was born, the project reaches thousands of students each year with an in-depth environmental message. Currently, students in 30 states and in several foreign countries are honing their environmental decision-making skills and preparing to be more responsible citizens of our global village. These results more than any others are the real measures of the program's success.

Partners

Project W.I.Z.E. had several types of partnerships that enabled it to come to fruition. It might be helpful to characterize these partnerships in two distinct categories: *funding partners*—the contributors of capital in this joint venture who shared risks and benefits; and *implementation partners*—our professional colleagues who had joint interest in the project's ultimate outcomes.

From its inception, Project W.I.Z.E. was conceived as a collaboration among ecologists and education experts in several zoos. These implementation partners were built into the project in order to strengthen its potential for nationwide replicability. By testing the viability of the program in diverse settings—different school systems, widely varying administrative structures within the cooperating zoos, and student populations ranging from rural to urban and suburban—the program design model itself contained seeds for successful dissemination and the fundraising required to support it.

A different but equally important category of implementation partners must be mentioned. Hundreds of teachers provided valuable expertise on classroom management issues as they tested W.I.Z.E. in their classrooms and responded to seemingly endless evaluation questionnaires. Although the collective value of their time has not been factored into the total cost of the project, it constitutes, nevertheless, a significant implementation and funding partnership.

It is important to point out that the project's initial funding partner—the National Science Foundation (NSF)—worked with us at the preproposal stage, to encourage the formation of implementation partnerships. As the project progressed, many new partners joined in both the implementation and funding categories. They did so for two main reasons: the nature of the program satisfied their own programmatic needs in environmental education and they found it cost-effective to join us because we had already made the investment. Another interesting reason for their involvement was the fact that association with NSF-sponsored projects can in itself become a marketable commodity and provide access to certain funders.

Project W.I.Z.E. was successful in attracting new funding partners as it unfolded, because the program's positive results convinced the potential new partners that NSF's large investment should be augmented. Ultimately, we obtained funds from three private foundations. These funds were used to produce vastly improved teacher and student materials—costly improvements that could not have been envisioned at the project's beginning.

In later phases, after the program proved its validity and established positive results with thousands of students in 13 states, more funds for nationwide dissemination and training were provided by the National Diffusion Network (NDN), one of the best-kept secrets of the U.S. Department of Education. The NDN insists that projects supply extensive test data to support claims of educational effectiveness. Their requirements ensure that only those projects worthy of adoption in new sites receive the scarce federal support. The NDN has invested nearly $300,000 over a 4-year period, and enabled our project to become known to school systems throughout the country via federally funded State Facilitator offices in 50 states and U.S. territories. Our dissemination efforts have been recently reinforced through a grant from a corporate source that supports summer training seminars.

The newest development in our ongoing search for funding partners has been a brand new grant from the National Science Foundation, whose funds had been out of the picture for 5 years. Although our initial W.I.Z.E. grants came from NSF's Instructional Materials Development Program, our most recent grant for a program to train certified trainers came from another source within NSF—the Teacher Enhancement Program. Thus we came full cycle within a decade, back to our initial supporter. This experience suggests that program designers need to plan carefully their strategy for approaching funders and to understand the nuances of funding priorities of various subdivisions within large funding agencies.

In addition to dollars, our funding partners provided important intangibles, such as advice on project design, insistence on a thorough evaluation, attraction to implementation partners, and prestige that had the potential to leverage additional funds.

Lessons Learned

We have managed to sustain funding to the project over an 11-year period because the project changed, grew, and was able to demonstrate incremental levels of success with professionally gathered evaluation data. Program evaluation, in fact, proved to be the key element that tied the funding and implementation partners in a kind of marriage. Each partner—implementer and funder—stayed in for the long haul, because of the information supplied by the evaluation.

The most challenging stage of the project is making it assume a life of its own. This cannot be achieved overnight. Structures for shifting the fiscal burden must be put into place even as the end seems far away on the horizon. In our project, we have taken steps to have states and school systems assume costs of implementation after success has been clearly demonstrated within their own systems. Cost-sharing provisions, initiated during the local implementations, help draw the administrators into the project and offer them a stake in its success. They can then become strong regional supporters and lobby for municipal, county, or state funds to continue involvement with the program.

If all this sounds like a true fairy tale, let me wake you up to some realities. Programs of national dimensions cannot be implemented without some challenges. One problem we face is parochialism and competition for scarce funds. Programs that have proven their merit and consumed significant resources in their development should not be reinvented from scratch, using new funds, simply because a local institution or school system needs to see its name "in lights" on a similar program. Yet this happens with alarming frequency.

A very different kind of problem is an inability to visualize the full scope of the project, and consequently its expenses, at the outset. If one is sensitive to the evolving needs of the program, one cannot project all the costs accurately up-front. How, then, does the project director go back to the funders to ask for more money? It takes courage, creativity, and an honest explanation of the budgetary issues.

The most interesting, and in some ways most frustrating, lesson we have learned is that no matter how large your budget, if you are successful, you will always be a dollar short. The profusion of program expansion needs and good, new ideas generated by the program users will necessitate more funds ... and this will be the ultimate measure of your success.

Madeline Strong
Executive Director, Florida Advisory Council
on Environmental Education

Background and Purpose

Florida is known internationally as the "Sunshine State" and as a highly favored haven from cold weather and economic depression. Florida's astounding diversity and richness of plants, wildlife, beaches, coral reefs, marshes, wetlands, and woodlands are unmatched in North America. The state's exceptional environment, pleasant climate, and strong economy have combined to establish Florida as the nation's fourth most populous state with 13 million residents and more than 40 million annual visitors.

Florida's environment and economy are closely interrelated. The state's acclaimed environmental resources are largely responsible for Florida's economic success, as evidenced by the 180,000 jobs and $17 billion in annual revenue generated by the state's tourism industry. In turn, this strong economy supports the state's efforts to protect its environmental resources.

Today, Florida is at a crossroads that could forever alter the beauty and quality of this special place. Florida is continuing to grow. Each day, 900 new residents settle in Florida and use an additional 110,000 gallons of fresh water, produce an additional 90,000 gallons of wastewater, and create an additional 6,000 pounds of solid waste. These ever-increasing demands on Florida's natural resources persistently threaten the state's environment, economy, public health, and quality of life.

In addition,

- Ninety-two percent of Florida's population uses ground water for their daily needs; at the same time, Florida has 60,000 underground storage tanks of petroleum. This poses a major environmental health hazard.
- Florida has 60,000 new septic tanks permitted every year.
- Florida has 561 threatened and endangered species.
- Florida generates more plastic and paper solid waste than any other state in the nation. In 1989, only 4 percent was being recycled. We now have a new solid waste law that is making a significant difference, but we have a lot of work to do.

Floridians cannot afford to make decisions for managing growth based on erroneous or inadequate knowledge. Selecting the wrong management options will result in costly and often irreversible impacts on the state's environment and economy. Florida's residents and visitors must be aware of the long- and short-term consequences of their choices.

State-Supported Environmental Education Partnership

The environmental education partnership in Florida has evolved over a 20-year period. In the beginning, the Florida Legislature funded positions in the Department of Education and provided mini-grants to school systems for up to $3,000 each. In 1989, however, to address the far-reaching needs for environmental education in Florida, the Legislature amended the Environmental Education Act to create a five-member partnership to facilitate comprehensive, coordinated environmental education for the state's residents and visitors. The goal of this statewide effort is to achieve a populace with a better understanding of our natural resources and how they relate to the economy, public health, and quality of life, and to foster understanding of, and eventually to achieve, the proper management, protection, and conservation of Florida's environment. This creative legislation was amended and enhanced during the 1990 and 1991 legislative sessions.

The five entities operate as environmental education partners, but are separate and have individual responsibilities. Their memberships and programs are deliberately and carefully linked to foster a coordinated, consistent, and comprehensive approach to provide statewide environmental education. These five environmental education partners are:

- Florida Advisory Council on Environmental Education (FACEE)
- Interagency Coordinating Committee for Environmental Education (ICCEE)
- Department of Education (DOE), Office of Environmental Education (OEE)
- Executive Office of the Governor (EOG)
- Environmental Education Foundation of Florida, Inc. (Foundation)

The Florida Advisory Council on Environmental Education (FACEE)

The Florida Advisory Council on Environmental Education (FACEE) is probably the central partner. FACEE was created to serve as a forum for environmental education in the state and to coordinate a comprehensive environmental education grants program aimed at reaching the state's 13 million residents and 40 million annual visitors with up-to-date information about Florida's fragile environment.

The FACEE consists of 11 voting members and two ex-officio members who represent a diverse group of individuals with varied backgrounds, interests, and areas of expertise. Membership includes lawmakers, public officials, agency representatives, and community, environmental, and industry leaders.

FACEE voting membership includes two appointees each from the Florida Senate and House of Representatives, a representative from the Executive Office of the Governor (EOG), a representative from the Department of Education (DOE), and five appointees named by the Governor. In order to truly serve as a forum for statewide environmental education and to improve communication and coordination, the chairman of the Interagency Coordinating Committee for Environmental Education (ICCEE) and the President of the Environmental Education Foundation of Florida, Inc., serve as ex-officio members on the FACEE, and the chairman of the FACEE serves as an ex-officio member on the ICCEE.

Its diverse composition enables the FACEE to make objective decisions regarding the grants program, policy, and recommendations that affect environmental education throughout the state. Because of the balance within the FACEE's membership, no single special interest is given an unfair advantage.

In order to carry out Florida's environmental education mission, the FACEE is directed to:

- Serve as a forum for the discussion and study of problems that affect the environment and environmental education.
- Advise the Governor and Cabinet and the Legislature on policies and practices needed to provide environmental education.
- Review proposals for projects or programs to receive funding from the Save Our State Environmental Education (SOS EE) Trust Fund.
- Recommend to the Governor and Cabinet a priority list of the projects and programs to be funded through the SOS EE Trust Fund.
- Review the implementation of the projects and programs funded from the SOS EE Trust Fund.
- Prepare an annual report and submit it to the Governor and other Cabinet members, the President of the Senate, and the Speaker of the House of Representatives.
- Support the efforts of the Interagency Coordinating Committee for Environmental Education.

The Save Our State Environmental Trust Fund

To support the statewide effort to promote environmental education, the 1989 Legislature created the Save Our State Environmental Education (SOS EE) Trust Fund in the Department of Natural Resources (DNR).

Each year the Legislature has appropriated funds from the SOS EE Trust Fund to support the operations of the FACEE, DOE, and EOG and the environmental education grants program administered by the FACEE.

The Trust Fund has received revenue from four dedicated sources:

- "Save the Manatee" license plate sales. The endangered Florida manatee appeals to many people and the plate has been selling very well. Half of the proceeds go to a manatee recovery trust fund and half to environmental education.

- "Panther" license plate sales. Twenty-five percent of proceeds from these sales go to the environmental education trust fund, but they are earmarked to fund only panther habitat education projects.

- At least 2.5 percent of the revenue generated from the sale of saltwater fishing licenses. The proceeds from the saltwater fishing licenses are placed in a special "Aquatic Resources Education Account" within the Trust Fund. These funds are restricted to certain types of aquatic education projects that are in keeping with the DNR's aquatic education policy.

- A portion of interest earned on the Coastal Protection Trust Fund (CPTF) when its principal balance was above $30 million. This source may have been lost forever because its funds were needed during the 1991 legislative session to make up for shortfalls in the state's General Revenue Fund.

Interest from the CPTF had been the largest dedicated source of funding for the state's environmental education programs and its loss represents a significant decrease in funds of an estimated $1.4 million a year for Florida's environmental education effort. As a result, funding for general topic environmental education grants was reduced from $1.5 million in 1990 to about $500,000 in 1991. To continue the momentum of Florida's environmental education efforts, the state's five environmental education partners will need to work jointly with the legislative membership to secure an additional funding source.

The FACEE solicits proposals for programs and projects that will achieve the most cost-efficient and effective ways to teach the state's residents and visitors about the state's unique natural resources. All projects should inspire specific actions by individuals and groups that enhance and protect environmental quality.

Projects must avoid duplication of current major environmental education programs; however, the FACEE solicits projects that take advantage of opportunities to coordinate efforts. Joint ventures and matching contributions are also encouraged. All projects must also include an evaluative component to measure their effectiveness.

Although the FACEE welcomes proposals for projects and programs based on traditional approaches to environmental education, it also solicits projects that include:

- Innovative ways of involving members of the community who have not previously participated in environmental education programs or projects or who have had limited exposure.

- The enhancement of opportunities for interaction between different community groups and different age groups.

- Ways of helping Florida residents and visitors identify and implement meaningful lifestyle changes and understand that the collective impact of individual efforts can have significant and lasting positive effects on the environment.

To date, the FACEE has accepted proposals from those affiliated with federal, state, or local governmental agencies; private individuals; state or private colleges, universities, school systems, and other education facilities; and business, industry, research, and other profit and nonprofit organizations.

Successes

During 1990, the FACEE released two Requests for Proposals (RFPs) soliciting environmental education projects and programs throughout the state. Of the 224 proposals received, the FACEE recommended 37 to be funded at a total of almost $1.5 million.

In 1990, a "Statewide Multi-Media Public Environmental Education Campaign" was funded for a total amount of $344,920.

In July 1990, the FACEE released a second RFP soliciting proposals for "Environmental Education Projects Through Save Our State Environmental Education Trust Fund." Of the 183 proposals received, the FACEE recommended 36 to the Governor and Cabinet for approval. By early 1991, all 36 contracts had been negotiated and entered into for a total of $1,133,326.52.

The projects, ranging in funding from $3,617 to $118,594, were submitted by various proposers from the panhandle to the Keys. They included a wide array of projects that address a variety of target audiences and topics. Individuals and organizations whose projects are being funded include schools and universities, nonprofit organizations, private consultants and businesses, museums, parks, and state and local agencies. All 36 projects were completed by December 1991. The grant program for 1992 is in progress.

Future

The primary goals for the immediate future of the grants program are to continue the general topic grants program by monitoring current projects and soliciting new ones; to develop procedures for grants to be funded by the 2.5 percent of saltwater fishing license fees earmarked for aquatic education; and to determine the best use of the 25 percent of the revenue received from the sale of the Florida panther license plates earmarked for panther habitat education.

The FACEE also plans to work with its legislative members and the state's other four environmental education partners in seeking additional funding sources that can be dedicated to replacing the revenues lost from the Coastal Protection Trust Fund. Through its legislative members, the council will also seek to improve and strengthen Florida's statewide environmental education efforts and partnerships.

Panel 3: Question and Answer Session

Successful Partnerships to Finance Environmental Education

Moderator: Kathy McGlauflin, American Forest Foundation

In this panel discussion, questions focused on the following topics related to funding environmental education.

How Much Should a Title Sponsor Contribute?

Questions in this area ranged from how much to ask a title sponsor to contribute the year following initial sponsorship of a program to how much funding to expect from a standard title sponsor. One panelist suggested that when determining the amount of funding to request, project directors should assess the actual value the sponsor would receive from being associated with the program. The panelist emphasized that there is no set standard for sponsor support, and that it was important not to let the funding source dictate the scope or direction of the project.

How Important Is Program Evaluation?

Panelists agreed that a portion of the budget should be reserved for evaluating the effectiveness of the program or project. Panelists emphasized the importance of documenting program success in order to obtain future funding. Many potential funders are more likely to contribute to a project that has already demonstrated success.

Where Can Funds for Interdisciplinary Projects Be Obtained?

Panelists agreed that education programs that integrated more than one subject area, such as science and social studies, are now being given a high priority. A number of states and agencies are interested in supporting interdisciplinary efforts. Panelists recommended that grant writers stress the interdisciplinary aspects of projects in their proposals and justify why the interdisciplinary aspect is critical. The National Science Foundation (NSF) has a strong interest in programs that integrate science, math, and fine arts. NSF is currently issuing systemic grants to help school systems develop ways to accommodate multidisciplinary programs. Florida, for example, recently received an $8 million grant from NSF for their school systems. The American Lung Association also supports the development of interdisciplinary educational materials with a health focus.

What Kinds of Programs Have States Developed for Funding Environmental Education?

Florida and Ohio both have extensive programs to raise money for environmental education. Environmental education in Florida receives money from three primary sources: (1) interest from a Trust Fund; (2) sale of license plates of endangered species; and (3) sale of saltwater fishing licenses. (Florida's environmental education program is discussed in more detail in the presentation given by Madeline Strong, of the Florida Advisory Council on Environmental Education.)

Ohio dedicates one-half of all the fines it receives from air and water quality violations to environmental education. The bill allocating these funds was drafted in January 1990, and was passed in the state legislature in 3 months. The bill had broad-based support; people in Ohio really wanted to implement environmental education.

Kentucky, also, recently passed environmental education bills and quickly appropriated the money necessary to fund new positions. The state also plans to create an interagency task force on environmental education. In Pennsylvania, a state master plan for environmental education was recently implemented, which has attracted private support.

It was recommended that the U.S. Environmental Protection Agency provide a directory of what each state is doing to fund and implement environmental education programs.

How Can Corporate Sponsors Be Cultivated?

Panelists encouraged educators to seek funding from business and industry. Industrial giving is the largest source of funds for environmental programs. In soliciting funds from corporations, three key points were emphasized:

- People give money because they want to. In pursuing corporate funding sources, it is important to consider the motivation of business and industry to participate in a particular environmental education program. One suggestion was to present the idea of working together as a consortium to develop materials, so that the corporation becomes a partner rather than a sponsor.

- People do not give unless they are asked. Approach corporations with Boards of Directors that have a history of supporting environmental education programs. The Foundation Center (1-800-424-9836) publishes a directory, The Foundation Directory, that lists corporations that have given in the past and the amounts given. Panelists recommended approaching potential corporate sponsors with a firm strategic and business plan in hand.

- People give money to people not causes. Network directly with people in the corporation and make your ideas known. Local contacts, such as plant managers, can help establish a relationship with a corporation.

A general rule in initiating a partnership is always to keep the future in mind. Educators were advised to encourage any corporations that give money to environmental education to give for the long term as well as the short to ensure support for program expansion and followup.

What Other Funding Sources Are Available?

The Environmental Grant Maker Association (212-373-4260) also provides information on available environmental education grants, and offers a newsletter on grants. The National Diffusion Network (202-219-2164), a branch of the U.S. Department of Education, provides information on exemplary programs and how to obtain information on them. The American Federation of Teachers (202-879-4400) also is effective in getting information to educators.

Support for teacher training programs is available through the Eisenhower Mathematics and Science Education Program grants (202-401-1062).

A group called the National Association of Towns and Townships (202-737-5200) has training materials for local decision-makers, including videotapes and guidebooks, on laws that deal with environmental programs. Local grassroots support for environmental education is also available through agencies such as local Departments of Public Works.

Estate giving was also mentioned as a major source of funding. Panelists suggested that people talk to accountants and attorneys who are involved with estate giving to learn more about opportunities.

How Can Educators Make Better Use of the Programs That Are Currently Available?

Participants agreed that many good programs are already available, which could be adapted to specific needs. Some concern was voiced that the U.S. Environmental Protection Agency's small grants program under Section 6 of the National Environmental Education Act would support curriculum development efforts that would duplicate programs that already exist. Many felt that the bulk of funding should be given to efforts that build on existing programs.

Agencies developing environmental education materials need to get involved in distribution efforts. Because the federal government is limited in how much it can participate, organizations need to get their own messages across. One suggestion was made to form consortiums to take advantage of distribution systems. Another participant suggested that EPA could develop a seminar on how to create a consortium for environmental education.

What Are Some Tips for Writing a Successful Proposal?

Panelists and other participants offered the following tips for proposal writing:

- Learn about the potential funder's interests and goals. The proposal should be phrased to appeal to those interests and goals and to clearly explain the advantages of the partnership for both parties.
- Emphasize how the program being developed is different from other existing programs.

- Clearly spell out what your project consists of and what you hope it will accomplish; be redundant if necessary to get your ideas across.
- Have someone who is not familiar with your project review the proposal for completeness and common sense.

SECTION FOUR

WORK GROUPS

INTRODUCTION TO WORKGROUP SUMMARIES

The primary purpose of the workgroup discussions was to solicit ideas from participants concerning where they think environmental education should be headed in the future and how they think the federal government can best support their efforts. Work groups were organized on the following 12 topics: schools; colleges and universities; museums, nature centers, and parks; community-based youth programs; adult continuing education programs; nonprofit organizations; the business community, the workplace, and the marketplace; minority and multiethnic communities; government; teacher education; media and entertainment; and environmental health risk education. Two sessions of work groups were held so that each participant was able to attend two sessions on two different topics of his or her choice. The number of different work groups held on each topic varied depending on the level of interest expressed by participants in advance. Two work groups were held for each topic, with the following exceptions: five work groups were held for environmental education in schools (K-12), four were held for teacher education, and one work group each was held for community-based youth programs, adult continuing education programs, media and entertainment, and environmental health risk education.

Facilitators were chosen to lead each workgroup discussion with the following specific questions:

- What is the current status of environmental education?
- Where do we go from here?
- What should be the role of EPA and the federal government in supporting environmental education?

Facilitators were also encouraged to develop more specific questions according to their groups' interests and needs. Following the sessions, facilitators synthesized their discussions into a list of specific ideas that the federal government and others could use to develop future plans for environmental education. Facilitators then presented these ideas in a plenary session at the conclusion of the conference.

The following summaries, drawn from notes and flipcharts from workgroup sessions as well as transcripts of the presentations, represent a compilation of input from all facilitators for each topic. For example, the summary for the schools (K-12) group was compiled and reviewed by all four facilitators who chaired the five work groups on this topic. The ideas presented in these summaries do not necessarily reflect a consensus of all participants on a topic, but instead offer a range of views and suggestions from different perspectives. Some common themes emerged, however, that spanned most work groups:

1. The need for the federal government to play the role of facilitator by encouraging partnerships among nonprofit organizations, business, and academia and providing networks for information and resource sharing.

2. The need for formal and nonformal training in environmental education issues both preservice (in schools and universities) and on the job.

3. The need to develop programs and curricula at the grassroots level that meet the needs of and ensure relevancy to state, local, and community audiences.

4. The need to target segments of the population that are not now being reached such as minority and multiethnic communities, senior citizens, the illiterate public, and rural and urban populations.

5. The need for strong federal government support of environmental education through regional workshops, high-visibility publicity campaigns, funding, and awards and recognition programs.

6. The need to infuse environmental education into existing policies and programs in government, business, and academia.

The following Workgroup Summaries contain more specific information on the discussions that took place on each topic. We've included addresses and/or phone numbers for specific programs discussed, where that information was available to us, to enable readers to obtain more information.

WORKGROUP SUMMARIES

Environmental Education in Schools (K-12)

Facilitators: **Judy Braus, Office of Training and Program Support, U.S. Peace Corps**
Terry Ippolito, Office of External Programs, U.S. Environmental Protection Agency, Region 2
Arva Jackson, Educational Affairs Division, National Oceanic and Atmospheric Administration
Suzanne Kircos, Office of Public Affairs, U.S. Environmental Protection Agency, Region 5

What Is the Current Status of Environmental Education in Schools?

The consensus in these five work groups on schools (K-12) was that teachers believe environmental education is important but often do not have the materials, training, or funding to teach the subject adequately. There is a need for educators to be linked to a supportive network and be informed of means to obtain or use appropriate environmental education materials for their classrooms.

Workgroup members thought that environmental education materials in general lack widespread availability, acceptance, and consistency of program content and goals. The question of where environmental education fits into a curriculum also often prevents it from being taught, especially when materials suggest that it be presented as a separate subject. Workgroup participants stated that most current materials lack scope and sequence and need to be developed in a grade-by-grade progression. In many school environments, available environmental education materials also lack relevance because they are not connected to local or community issues; this is a problem particularly in rural and urban areas. The groups conceded that there are some good programs, but overall environmental education is fragmented at the national level. Participants emphasized, however, that students are getting more interested in environmental issues and are ready to learn.

Workgroup members felt that even where good materials are available, teacher education in how to implement environmental education programs is nonexistent or inadequate. Many teachers are not educated in environmental issues themselves. Thus, much of environmental education instruction is piecemeal and varies with the interest and competence of the individual instructor. Other stumbling blocks cited were unsupportive administrations and lack of state-mandated environmental education programs.

Where Do We Go from Here?

People in all of the work groups felt that environmental education needed to become part of the curriculum. Participants cited mandates for teacher certification and training as important first steps. They felt that preservice and in-service training in environmental education methods, especially for first-year teachers, needs to be built in to teacher education programs, such as in the State of Wisconsin. Visiting teacher and master teacher programs were suggested as ways to provide teachers with models and strategies for teaching environmental education. Teleconferencing was also suggested as a way to provide in-service training to large numbers of teachers. Many participants felt that teacher education in universities and colleges also needs to include environmental education, perhaps in the form of specific required courses. Many felt that teacher training that included hands-on experience, in addition to materials and methods, was very helpful in overcoming "science-phobia." Participants also emphasized the need for ongoing support and incentives for teaching environmental education, including pay incentives, opportunities for grant money, honoraria, and promotions.

The work groups felt that environmental education could be used as a vehicle for reform and restructuring in schools. They saw it as offering increased opportunities for interdisciplinary study and stressed the need to see environmental education as a "big umbrella" encompassing many different subjects, not just science and math. Some participants cited Project WILD[1] and Project Learning Tree[2] as examples of multidisciplinary environmental education programs that worked. Many felt that environmental education can motivate students by emphasizing real-world applications and hands-on experience. Most workgroup participants agreed that environmental education should be a combination of formal and informal instruction, and that infusion into existing curricula, especially at the lower grades, was preferable to block courses. It was also suggested that environmental education be written into existing textbooks and other teaching materials.

Some participants thought it would be helpful to develop a definition of environmental education that would focus programs. Many felt that a goal of environmental education should be to change behavior, not merely to provide students with skills. Environmental education should be participatory, action oriented, skill and knowledge enhancing, and focus on the real world.

Work groups emphasized the need to involve teachers in every step of program development, beginning early in the decision-making process. They stressed that environmental education should be a collaborative effort among all teachers, administrators, and the school board, and that it should have a community outreach component. One work group pointed out the importance of both teachers and students feeling "ownership" in their programs. Some participants suggested that policy changes were necessary and that environmental education directives needed to come from school boards, principals, and other administrators. Teachers should then be provided with money, materials, and support, and there should be an infusion network to share cross-disciplinary materials. It was suggested that every school have a liaison person dedicated to environmental education.

Workgroup participants also raised the issue of environmental literacy, asking the question, "What should an informed citizen know?" They felt that learning objectives needed to be developed in a broad range of areas. They also emphasized the need to develop measuring techniques, which could include revamping standardized testing such as the Standard Achievement Test (SAT) to include environmental education issues.

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[1] Project WILD, P.O. Box 18060, Boulder, CO 80308-8060, (303) 444-2390.

[2] Project Learning Tree, American Forest Foundation, 1250 Connecticut Avenue, NW, Suite 320, Washington, DC 20036, (202) 463-2468.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Education in Schools?

The work groups proposed that the federal government should concentrate its efforts on facilitating training and the exchange of information. All federal agencies, not just EPA, should be involved in environmental education, but EPA could take the lead in inventorying and connecting environmental education networks and distributing scientific and technical information, as well as information on successful programs and available grants and awards. Some work groups suggested that the federal government should provide a curriculum model and policy guidelines.

Most workgroup participants felt that federal government agencies, for the most part, should "stay out of curriculum development." Instead they should help provide teacher education, fund research for educators to develop or refine materials, and provide schools with low-cost non-copyrighted material that can be used in classrooms. The federal government should also focus on making existing clearinghouses more accessible and less costly to use. Some people proposed that the federal government could have a role in connecting clearinghouses and helping to solicit contributions. One workgroup participant suggested that cable television could be used as a delivery system for environmental education; another suggested a newsletter. Some members suggested that grassroots educators could work together to develop a position statement defining environmental education, which could then be disseminated by the federal government. Others recognized that a definition for environmental education was agreed upon at the Tbilisi, Georgia, world conference on environmental education in 1977.

One work group felt that environmental education programs should be developed both from the top down and the bottom up, such that policy is mandated at the federal and state level but programs are tailored from the community up to the state level. Some workgroup members suggested that EPA could provide policy guidelines on how states could mandate environmental education programs. Federal government agencies, and EPA in particular, could use grant dollars as an incentive to states to develop and implement master plans, which include teacher education, competency examinations, and grant programs. Members cited Wisconsin, Kentucky, and Maryland as three states with mandates for environmental education in place or in the works. Participants cited Wisconsin's environmental literacy program[3] for both teachers and students and the Tufts University Environmental Literacy Institute[4] as examples of effective programs. People suggested that states should be encouraged to share their successes and that the federal government could play a role in collecting and making this information on state models available. Educational fairs might also provide an opportunity to share information.

In the area of teacher training, workgroup members suggested that the federal government may be able to provide a leadership role in encouraging universities and colleges to emphasize environmental education during teacher education programs. They felt that environmental education should be mandated for all teachers of grades kindergarten through twelve. The federal government could also assist in setting up performance standards by which to assess teachers, and setting up regional centers with environmental educators to serve as resource people. One member suggested the creation of a teacher education institute. Regional workshops for teachers in how to implement and maintain environmental education programs were also mentioned.

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[3] Wisconsin Center for Environmental Education, College of Natural Resources, University of Wisconsin-Stevens Point, Stevens Point, WI 54481-3897, (715) 346-4973.

[4] Tufts Environmental Literacy Institute (TELI), Tufts University, 474 Boston Avenue, Medford, MA 02155, (617) 381-3452.

Most participants agreed that an important area of federal government assistance was in helping educators obtain funds, including providing seed money for environmental projects. The National Science Foundation and the National Oceanic and Atmospheric Administration were suggested as two sources of grant money. Participants also felt that, in funding research, federal government agencies should pay attention to research already done regarding environmental education, which emphasizes the importance of hands-on activities and teaching teachers. Funding agencies should also favor grant proposals that link research findings to skill development. One participant suggested that someone needs to develop a model for teaching environmental education, but others countered that a range of models would be more desirable.

Participants proposed that the federal government hold workshops in grant writing and how to apply for funds, and develop or strengthen networks for helping educators become more aware of avenues of financial assistance, including partnerships with state resource agencies and industry. EPA regional offices could serve as focal points for coordinating partnerships. Work groups suggested that the federal government could assist schools in finding partners, and require that grant writers form partnerships in order to receive money. In funding projects, the federal government could also help promote community-based activity and help solicit Native Americans, retired educators, and other resource people to serve as mentors.

Work groups were enthusiastic about the idea of regional environmental education conferences to build on the ideas begun at this national conference. They felt that such conferences should include teachers, administrators, school board members, *and students*. They emphasized involving teachers not yet reached.

Participants wanted to ensure that environmental education would be part of the U.S. Department of Education's America 2000 strategy to reach the President's national education goals, and that EPA should develop a strategic plan for measuring achievement of these goals. The federal government could help to establish objectives for environmental literacy and ensure that it becomes a national priority by promoting it to the public. EPA could establish an awards program to recognize teachers for successful projects and environmental education models.

Finally, the work groups felt that EPA, through the National Environmental Education Act, could assist in funding all disciplines, and potentially fund a hotline that could provide educators with up-to-the-minute information on environmental education.

Environmental Education in Colleges and Universities

Facilitator: Robert Dixon, Environmental Research Laboratory (Corvallis, Oregon), U.S. Environmental Protection Agency

What Is the Current Status of Environmental Education in Colleges and Universities?

Members of these two work groups agreed that environmental education in colleges and universities today is an important and timely topic. Emerging programs, however, are perceived as fragmented and under-funded. They are also neither comprehensive nor integrated. Interdisciplinary issues such as environmental education rarely fit existing academic structures, especially in terms of teaching and research requirements for promotion or tenure. In small schools, environmental education is usually devoted to engineering, pollution control, or natural resources departments but rarely to all. In larger institutions, environmental education, environmental studies, and environmental sciences are sometimes represented by distinct departments.

The combination of science and policy that environmental education offers prepares students for numerous careers, including those in business, engineering, science, and health. In recent years, the desire for financial resources (e.g., grant money and contracts) has stimulated development of environmental programs. Student interest has also been a factor in increasing these programs, although sometimes less important than the pursuit of research support. Environmental programs attract students, however, and with declining enrollment, student interest in the environment may provide schools with an opportunity to offset the trend by offering environmental curricula.

Because the nature of environmental education suggests structural change, workgroup participants cited traditional "turf" battles between departments and university administration as a major problem in implementing environmental education programs. Issues related to where environmental education should be taught, whether it is considered hard or soft science, and competition among departments and between colleges all need to be resolved. Another consideration is the need to coordinate among the many types of institutions involved—junior and community colleges, universities, graduate, and undergraduate institutions—and to recognize that environmental education among these different units is a multi-stage process. Community colleges, in particular, provide a substantial resource for minority students, and many students graduate from them into universities.

Other issues/needs cited by the work groups were for greater coordination among resident instruction, research, and extension or outreach; for environmental programs to provide education rather than advocacy; and for teacher training, retraining, and professional continuing education.

Where Do We Go from Here?

Colleges and universities need to acknowledge the value of partnerships among academia, government, and industry in implementing environmental education programs. Some workgroup members felt that industry can play an important role through research and training partnerships, money, and in-kind assistance. Both work groups advocated information sharing through data bases, clearinghouses, teleconferencing, telecommunications networks such as EcoNet,[5] and organizations such as the Alliance for Environmental Education.[6] In particular, workgroup members felt that sharing of success stories would be essential.

The work groups recognized that environmental education is broad and encompasses the acquisition of awareness, knowledge, tools and skills, values, and motivation. The work groups also supported the development of a common definition of environmental education that included all of these aspects. Members emphasized the importance of coordinating the many components of environmental education including training specialists in environmental studies, teacher training, professional infusion, extension and outreach, and policy formation. They also suggested that teacher certification programs in environmental education may make these programs more attractive.

Participants also agreed on the need to break down traditional barriers to facilitate multi- and interdisciplinary programs, and ensure environmental literacy across the curriculum. Members suggested working with the National Association of State Universities and Land Grant Colleges (NASULGC)[7] and the National Environmental Training Foundation[8] to educate and stimulate university leaders to encourage environmental education programs.

Extension and outreach programs at land grant universities have been active in environmental education for decades. Some members felt it would be useful to build on this successful model. Resources in existing programs could be sharpened or redirected. In Oklahoma, high schools, vocational technical colleges, junior colleges, and colleges and universities have developed a holistic approach to environmental education. Each component of the education system contributes to enhancing the overall quality and quantity of environmental training activities.

Environmental education can be viewed as multi-dimensional at the university level, including the components: environmental studies, teacher training, infusion, extension and outreach, and policy formation. One-hundred-twenty-five university presidents, through the University Presidents Roundtable, have endorsed environmental literacy to increase awareness and motivate action. This effort has been spearheaded by Tufts University.[9] EPA should foster this momentum.

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[5] EcoNet, Institute for Global Communications, 18 De Boom Street, San Francisco, CA 94107, (415)442-0220, Fax (415)546-1794.

[6] Alliance for Environmental Education, P.O. Box 368, The Plains, VA 22171, (703) 253-5812.

[7] National Association of State Universities and Land Grant Colleges, 1 Dupont Circle, Suite 710, Washington, DC 20036, (202) 778-0818.

[8] National Environmental Training Foundation, 915 Fifteenth Street, NW, Suite 200, Washington, DC 20005, (202) 628-8200.

[9] Tufts University, Environmental Programs, Curtis Hall, 474 Boston Avenue, Medford, MA 02155, (617) 381-3452.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Education in Colleges and Universities?

Workgroup participants felt that environmental education needed to be built up from the grassroots level, but that the federal government could offer financial and coordination assistance. The work group commended EPA on establishing the Federal Task Force on Environmental Education, and felt that there was a need for state or federal guidelines for requirements in environmental education.

The work group outlined a number of ways EPA could help, perhaps the most valuable of which would be to provide a consolidated information service and to bring people together through vehicles such as clearinghouses, partnerships, teleconferencing, regional conferences, bulletins, and newsletters. Some specific communications activities suggested by the work group are:

- EPA could help foster partnerships among government, industry, and academia, and recognize that environmental education is a multi-step process which must involve high schools, junior colleges, colleges, and universities. As part of this effort, EPA could coordinate regional conferences involving government, industry, and academia.

- Through the Federal Task Force, EPA could sponsor regional strategy sessions for environmental education coordinators at colleges and universities. The workgroup members felt that a regional structure would probably be the most successful for implementing future programs. These workshops could cover planning, strategy, implementation, coordination of in-kind sessions, and informed decision-making.

- EPA could work with national coordinator groups such as the NASULGC to stimulate coordination among teaching, research, and extension, and across departments and colleges.

- EPA could facilitate electronic networking by providing easier access to existing data bases of information on environmental studies and environmental education. One work group cited the National Agricultural Library's willingness to help. EPA could take a leadership role in funding the consolidation of information on all federal programs as well as success stories in a clearinghouse. Some workgroup members expressed reservations, however, about EPA establishing its own clearinghouse, feeling that it would be "reinventing the wheel" since many such networks already exist.

- EPA could produce a document, which includes case studies, describing what each federal agency is doing in environmental education, what grant money is available, and how to apply for grants.

- EPA could coordinate internship programs, which could begin with the organizations represented at this conference.

In addition, the work groups suggested that EPA could perform environmental audits of campuses to increase environmental awareness. Overall, the group felt that EPA needs to be an effective advocate to help universities obtain resources, since funding is a primary obstacle to implementation of environmental education programs.

Environmental Education in Museums, Nature Centers, and Parks

Facilitator: Bob Huggins, National Park Service, U.S. Department of the Interior

What Is the Current Status of Environmental Education in Museums, Nature Centers, and Parks?

The two work groups on museums, nature centers, and parks felt that the status of environmental education at these institutions is generally very good and improving, although funding is still a problem. Museums, nature centers, and parks lend themselves to environmental education since many were established for that purpose and have proven programs. Museums and parks are experienced in connecting informal and formal education and enhancing what is learned in the schools. Workgroup members suggested, however, that programs with schoolchildren are more successful when the teacher has prepared the class for the visit. One participant also observed that the quality of programs in the field varies, and that perhaps some quality control would be useful.

Where Do We Go from Here?

Much of the discussion in the work group focused on what museums, nature centers, and parks could offer to help infuse and integrate environmental education into schools. Many participants suggested that schools could look at what these facilities have been doing for years, and consider ways to use these existing resources. Documenting programs for teachers was suggested as one cost-effective way to share information. The workgroup facilitator stressed that the most successful programs have worked closely with schools. One participant cited an example of a park that approached the local school superintendent and asked that the park visit be integrated into the curriculum. Other members advocated more partnerships based on this model.

Some museums, parks, and nature centers have also formed successful partnerships with each other. For example, the National Marine Educators' Association was cited as an organization whose 1,200 to 1,500 members, including teachers and researchers, work cooperatively. Another group, the Association of Science Technical Centers, reports on what science museums have been doing within school programs. The Alliance for Environmental Education[10] was also cited as a group interested in networking and involving museums, nature centers, and parks.

Workgroup members had a number of suggestions for curriculum development including classes designed for teams of children and adults, in which the adults acted as co-teachers and could follow up programs at home. The work groups stressed that the adult population is a large audience for museums, nature centers, and parks, and should not be neglected in planning programs. Another proposal involved youths and adults working together to develop and then peer teach curricula in their communities.

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[10] Alliance for Environmental Education, P.O. Box 368, The Plains, VA 22171, (703) 253-5812.

Another topic of discussion was the extent to which environmental education exhibits at museums, nature centers, or parks should encourage or were capable of encouraging action. The work group posed the question of how to design exhibits so that they could have an impact in the framework of a typical 2-hour visit. Recycling was cited as an activity that has been very helpful in generating positive action and making visitors feel they are contributing. Another participant suggested apprenticeship programs for students at museums, parks, or nature centers.

Workgroup members discussed the importance of evaluation in environmental education. Several members asked whether any existing programs monitored for changes in behavior or attitude. Another discussed the difficulty of quantitative testing and stressed the value of simply observing reactions.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Education in Museums, Nature Centers, and Parks?

The work group suggested that the federal government, and EPA in particular, begin by tapping into the existing resources at museums, parks, and nature centers, rather than trying to develop their own materials. EPA could focus on providing a network with established environmental education organizations for dissemination of information and funding, lending support with both human and technological resources. Some suggestions made by workgroup members include:

- Distribute available grant money with geographical equality, with emphasis on inner city populations.
- Develop regional advisory boards that would understand regional needs.
- Develop a fund for transporting school children to environmental education programs at museums, parks, and nature centers.
- Work with the U.S. Department of Education in promoting environmental education.
- Set up forums of information sharing at the regional level to allow collaboration among museums, nature centers, and parks, as well as grades kindergarten through twelve, and colleges and universities.
- Devise a method to measure changes in behavior and attitude inspired by environmental education programs.
- Hire practitioners, including mid-career professionals, who have a background in environmental education at EPA.

- Loan EPA staff to other federal agencies with environmental education mandates for staff development.
- Encourage EPA to facilitate the placement of student interns and teacher fellows in various resource agencies of the federal government.

Environmental Education in Community-Based Youth Programs

Facilitator: **Paul McCawley, Extension Service, U.S. Department of Agriculture**

What Is the Current Status of Environmental Education in Community-Based Youth Programs?

The work group on community-based youth programs observed that excellent organizations and programs, many of which rely heavily on volunteers, are already in place. Many workgroup members felt, however, that these programs were missing important audiences and were not coordinating well at the local level. The work group felt that youths should be given access to participate in program planning and implementation, and that both youth and adult leaders need better access to program materials and opportunities.

The work group cited several successful programs that have made environmental education a priority in the last year. The 4H clubs, for example, reached four million youths, half of them in urban areas. The City of Los Angeles[11] and the YMCA[12] and 4H groups[13] in North Carolina are also providing leadership and counselor training in environmental education. The Girls and Boys Clubs are a resource that could be used to direct environmental education programs to thousands of youths in urban areas.

Where Do We Go from Here?

The work group indicated that leader training, including training of volunteers, is a priority for community-based youth programs. Many members felt that community-based environmental education programs should move toward the use of youths as educators, peer teachers, and mentor programs. Participants felt that these programs will need to rely more and more on inter-organizational cooperation to capitalize on various strengths. Communication and planning will have to take place both vertically and horizontally across organizations.

The work group emphasized that the definition of environmental education needs to be expanded to include urban environments, by dealing with environmental risk and other issues that can be made immediately relevant to urban audiences.

The work group recognized that too few programs are devoted to minorities and ethnic groups, and that museums, parks, and summer camps could be used to reach more youths in these groups. In addition, coordination of all youth-serving programs in a community is needed to target local issues and minority and ethnic audiences, and to tap into local energy, expertise, and volunteer networks.

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[11] City of Los Angeles, Environmental Affairs Department, 200 North Spring Street, Room 1500, MS-177, Los Angeles, CA 90012, (213) 485-9981.

[12] YMCA, Camp Seagull Environmental Center, Route 65, Box 1, Arapahoe, NC 28510, (919) 249-1111.

[13] 4-H Program Specialist, North Carolina State University, Ricks Hall, Box 7606, Raleigh, NC 27695, (919) 515-3242.

In-school and out-of-school programs need to work together to coordinate their efforts. Community programs should be based on what is already happening in the schools. Science and math opportunities should be coordinated among youth groups and institutions such as the National Science Foundation. Data bases and clearinghouses could be valuable tools in connecting people with the information they need.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Education in Community-Based Youth Programs?

The work group felt that the federal government could help by making youth education a priority for funding. They had several suggestions for how this could be accomplished:

- Assign a certain percentage of grant dollars to nonformal youth education programs. Focus funding on development of projects that are replicable.
- Reward requests for proposals that emphasize minority and ethnic programs, perhaps by highlighting the use of learning centers and camps.
- Host training workshops for youth educators so that youths can serve as instructors for younger children.
- Use conference resources to sponsor multi-state, state, and local workshops. EPA could provide seed money to local and state organizations submitting proposals to host conferences that specifically address community-based environmental education. These conferences would cover training needs and opportunities, program availability and support, and issue focusing.
- Support community-based youth programs publicly and politically. Sponsor international outreach programs.

The federal government could also help by identifying model strategies and available technical assistance to help community-based youth programs coordinate their efforts and focus on specific issues such as pollution prevention, environmental risk, and sustainable development. EPA could identify mission statements to help youths focus their goals. In keeping with the workgroup's opinion that youths should be involved in setting priorities and developing and implementing programs, the group suggested that EPA earmark an amount of funding in each region for proposals developed by youths.

Finally, the work group thought that an EPA data base would be valuable if it could be:

- Made accessible through existing networks.
- Used to identify current youth programs.
- Maintained by EPA for the long term.

Environmental Education in Adult Continuing Education Programs

Facilitator: Paul McCawley, Extension Service, U.S. Department of Agriculture

What Is the Current Status of Environmental Education in Adult Continuing Education Programs?

The work group characterized adult continuing education as not easily identified, coordinated, or addressed. They acknowledged that good programs and materials in environmental education were available for some segments of the population, but that programs were missing some major groups. Among those groups currently not being addressed or being reached only sporadically are minorities and ethnic communities, senior citizens, the illiterate public, the business community, policy makers and elected officials, and the media.

One of the key challenges of adult education, workgroup members pointed out, was the critical need for hands-on and experiential activities. Like children, most adults learn best by doing and need to be involved and feel they are making a contribution. Also, as adults, many have passed the peak in their learning curve and will retain information much more readily if they have been participants rather than observers. Also, in many adults, habits are ingrained whereas with youth audiences habits are still being formed. Another challenge in adult education is the variety of educational backgrounds and cultures addressed, emphasizing the need for materials in different languages and at a level that is easy to comprehend yet not condescending. Workgroup members stressed that available materials could be used more effectively, and that programs should encourage adults to share knowledge and act on their new knowledge. Peer and mentor relationships were also found to be lacking.

Where Do We Go from Here?

The work group agreed that more effective adult education strategies and materials are necessary and outlined three goals:

1. Target segments of the population currently not being reached, including minorities and ethnic groups, senior citizens, people with literacy problems, and people in business, government, and the media.

2. "Close the circle" of education by involving individuals in sharing and acting on knowledge as peer educators, mentors, and contributors at all levels.

3. Tap into local energy and expertise. There are a lot of minority educators who need to be included in the educational structure. Local libraries and librarians are also being underutilized.

In developing materials, the work group advised that some programs for youths could be used by adults but may need substantial modification. Other materials may need to be geared to a different level or made less technical for an intergenerational audience. Workgroup members cited the examples of the Robert Wood Johnson Foundation's Y.E.S. (Youth Exchanging with

Seniors) Project[14] and the Kellogg Foundation intergenerational project that brings 4-H students and seniors together. The goal of such programs would be to involve all generations in adapting and adopting practices and sharing problem solving.

To provide continuing education to professionals in agencies and businesses, the work group emphasized the need to take advantage of opportunities to channel executives out of their corporate structures to address issues of interest to the entire community. Education for business professionals must include how the community would benefit by particular actions. Local forums based on environmental issues can bring together coalitions of people of various backgrounds and ages to broaden and expand their values.

In order to promote adult education in environmental issues, communities need to build an agenda for environmental literacy and action. It was suggested that "health" be used as a target issue to bring people together on an environmental topic of common concern. Communities also need to develop tools with which they can evaluate the success of adult education programs in terms of increasing both people's awareness of issues and the rate at which people adopt new behaviors. The work group identified the need to examine what mechanisms are missing in moving people from no knowledge to awareness to action.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Education in Adult Continuing Education Programs?

Workgroup members agreed that the federal government, and EPA in particular, could help by emphasizing and prioritizing projects in nonformal adult education, both through funding and technical support. As a followup to this conference, EPA should implement regional and local conferences that focus on educator training, accessing local resources, and program evaluation. These local conferences could culminate in the creation of community environmental issue forums through which local issues of importance can be identified and put on a community agenda. EPA could also help promote and support workshops at the local level targeted toward specific audiences such as seniors and minorities.

The federal government could play a major role in facilitating partnerships among academia, nonprofit organizations, businesses, and government agencies. They could support continuing education programs at universities, especially those that target audiences not otherwise reached. EPA could also encourage local nature centers, museums, and parks to promote community environmental education for adults. Conducting workshops or training programs in media relations would help environmental educators learn how to get media support and train media in how they can obtain information on various environmental programs. Through media briefings, adult education programs could establish credibility and open up a network of communication within the community.

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[14] Robert Wood Johnson Foundation, Y.E.S. (Youth Exchanging with Seniors) Project, District 2 Director, Texas Agricultural Extension Service, Lubbock, TX 79401-9746, (806) 746-6101.

Environmental Education in Nonprofit Organizations

Facilitator: **Bonnie Smith, Center for Environmental Learning, U.S. Environmental Protection Agency, Region 3**

What Is the Current Status of Environmental Education in Nonprofit Organizations?

The two work groups on nonprofit organizations represented a wide range of experience from those who were relatively new to environmental education to those who had devoted 20 years or more to the field. Members discussed that many nonprofits, such as the National Wildlife Federation,[15] Renew America,[16] and Project WILD,[17] as well as a number of federal agencies, in addition to EPA, offer curriculum materials, products, and services.

Many participants felt that although numerous nonprofit environmental education programs exist, three major problems need to be solved:

1. How to reach the most people, which means targeting cities, and how to finance programs.

2. How to build, expand, and maintain existing networks and resources.

3. How to disseminate available materials and training.

Leaders present from many key environmental organizations were aware of both local and national programs, networks, and initiatives. In addition to ERIC,[18] EcoNet,[19] and many subscription programs like DIALOG,[20] participants discussed some effective programs for dissemination currently in place or being developed including an on-line computer database clearinghouse run by the Texas Environmental Center,[21] the citizens' hotline Chesapeake Resource Information System,[22] and UNESCO's INFOTERRA: International Network.[23] Despite these existing resources, participants felt there was a need for new efforts, especially local initiatives, and for different programs to connect with others working on similar initiatives.

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[15] National Wildlife Federation, 1400 16th St., NW, Washington, DC 20036, (202) 797-6800.

[16] Renew America, 1400 16th St., NW, Suite 710, Washington, DC 20036, (202) 232-2252.

[17] Project WILD, P.O. Box 18060, Boulder, CO 80308-8060, (303) 444-2390.

[18] ERIC Clearinghouse for Science, Mathematics, and Environmental Education, 1200 Chambers Road - 3rd Floor, Columbus, OH 43212, (614) 292-6717.

[19] EcoNet, Institute for Global Communications, 18 DeBoom Street, San Francisco, CA 94107, (414) 442-0220, (Fax) 415-546-1794.

[20] DIALOG Information Services, Inc., 3460 Hillview Avenue, Palo Alto, CA 94304, 800/3-DIALOG (800-334-2564 or 415-858-3785)

Where Do We Go from Here?

One work group felt that environmental education should be mandated at the state or local level but driven by grassroots networks. An important role of nonprofit organizations is to empower people at the grassroots level to participate actively in resource management, planning, and implementation. The work group emphasized the need for nonprofits to develop a handbook of successful case studies to encourage legislation on environmental education in a variety of states. The National Wildlife Federation is taking the lead in this effort, working on the local level with organizations and individuals. At this time, federal participation is not needed with this grassroots effort.

Many participants had suggestions for approaches to environmental education, but most agreed that it should be based on experiential learning and that it should be created through broad access to information resources and collaborations. As one participant said, the goal is to "have the environment seen as a playing field on which all other activities compete."

The work groups suggested many ways that nonprofit and nongovernmental organizations can continue to integrate environmental education through formal as well as informal channels, supporting the needs of educators and helping to integrate members of the business sector into environmental education efforts. Nonprofits are in a unique position to create, expand, and leverage community resources to facilitate community contacts and learning opportunities such as field trips with industrial and natural settings. They can also help identify roles for community groups that do not now have an environmental focus, by finding pathways of support, sponsoring events, and designing models for local partnerships. Nonprofits can press an environmental education agenda with state and federal legislators, as well as international funders such as the World Bank.

One workgroup participant said that success stories would be useful for all groups to provide models for effective, replicable, and economically feasible programs that meet community needs.

The work groups felt that a process was needed to review and evaluate existing environmental education information to establish a quality standard. The development of a centralized information service was cited as another need.

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[21] Texas Environmental Center, Environmental Education Outreach Coordinator, Texas General Land Office, 1700 Congress, Room 730, Austin, TX 78701, (512) 475-1577.

[22] Chesapeake Resource Information System, 1-800-662-CRIS.

[23] UNESCO's INFOTERRA: International Network, UNESCO, 7 Place de Fontenoy, 75700 Paris, (Fax) 011-331-42-73-30-07.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Education in Nonprofit Organizations?

Both work groups felt that leadership from the federal government, from the President on down, is critical to the establishment of environmental education on the national agenda. The government needs to take the lead in promoting the importance of environmental education through highly visible publicity campaigns. Both work groups felt that the main challenge for the federal government is to join forces with nonprofit organizations. Several of the participants see EPA and the other federal agencies ready to accept that challenge.

Another role for the federal government stated by one participant is to "keep us communicating." The breadth of representation at this conference was productive. It was viewed as important to bring together organizations that are in the environmental education business, those that are getting into this area, and those that focus elsewhere but would be willing to assist in environmental education projects.

Participants felt that EPA and other federal agencies needed to focus efforts and funding on three major areas:

- To build local collaborations among business, government, and nonprofit organizations. EPA needs to contribute money as well as support to partnership-based programs. These programs need to be highly visible to build informed and active local constituencies for environmental education and environmental protection. These constituencies should then carry out community-based agendas.
- To develop a set of guidelines or standards that would outline what students should learn in order to graduate from high school. EPA should fund and participate in the American Society of Testing Materials (ASTM) Environmental Literacy Committee. The standards that are being developed through ASTM would encompass knowledge, skills, and habits of mind. One work group also cited as a goal the creation of "worldwise" schools, in which students learn about environmental conditions and problems through exchanges such those currently run by the Peace Corps.[24]
- To establish balanced environmental education programs, which provide both adults and young people with opportunities for information, education, and action. Many workgroup members expressed concern that adults were currently being left out of environmental education plans.

At the conclusion of both work groups, members summarized what they would like to see happen in environmental education with federal support within the coming year:

- EPA and other federal agencies should develop partnerships with nonprofit organizations.

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[24] U.S. Peace Corps, 1990 K Street, NW, Washington, DC 20526, (202)606-3100.

- Create a centralized "Who's Who and Who's Doing What." By organizing and consolidating existing resources, this information clearinghouse should contain information from across the country and be accessible at the local level. The North American Association for Environmental Education (NAAEE)[25] is preparing a "Who's Who of Individuals in Environmental Education."
- Sponsor another youth environmental action forum, in conjunction with other agencies, and include youths on the planning committee.
- Provide for environmental education consultation on a regional and local level.
- Sponsor an environmental education conference for people of color.
- Distribute funding and support with geographic equity (urban, rural areas).
- Use grant dollars for education, not only research or curriculum development.
- Publish a process flowchart that illustrates how organizations can establish partnerships, obtain funding, and access and update information on the clearinghouse.
- Participate in the Earth Summit (The United Nations Conference on Environment and Development) in June 1992.
- Establish an environmental training program for federal agencies run by nonprofit organizations.
- Encourage the use of Eisenhower Mathematics and Science Education Program grants (Title II, Public Law 100-297) for teacher staff development.[26]

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[25] North American Association for Environmental Education, 1255 23rd Street, NW, Suite 400, Washington, DC 20037, (202) 467-8754.

[26] Eisenhower Mathematics and Science Education Program, U.S. Department of Education, 400 Maryland Avenue, SW, Room 2040, Washington, DC 20202-6140, (202) 401-1062.

Environmental Education in the Business Community, Workplace, and Marketplace

Facilitators: **Margaret McCue, Office of Public Affairs, U.S. Environmental Protection Agency, Region 5**
Helen Taylor, ICF Kaiser Engineers

What Is the Current Status of Environmental Education in the Business Community, Workplace, and Marketplace?

Participants in these two work groups observed that environmental education efforts vary greatly in the business community, often by the size of the business. A few corporate leaders have taken aggressive environmental stands, and many businesses are ahead of the U.S. government in terms of taking environmental responsibility. The work groups pointed out that there are many different facets to environmental education in business with diverse audiences who must be addressed, including:

- Educating businesses to adopt environmentally sound policies.
- Educating workers to cultivate environmentally sound habits and practices.
- Educating consumers and stockholders to be aware of environmental issues and support environmental efforts by business.
- Supporting school and community youth programs, which affect future employees.

The work groups felt that, overall, businesses are becoming more aware of environmental issues, but they face many barriers to environmental education program implementation. First, many businesses encounter polarization and mistrust when seeking possible partnerships with nonprofit environmental groups and government agencies. Finding funding for environmental education programs is also a problem, especially in this time of economic hardship. The current economic climate could, however, serve as a catalyst for partnerships as the necessity of pooling resources becomes more apparent. An example of a successful funding program is the Environmental Fund of Pennsylvania. Also, industry is not always aware of how to go about forming partnerships, and needs better access to information on existing networks. Likewise, local governments are just learning how to motivate businesses to participate in environmental education efforts. Finally, it is not always easy for the public or industry to distinguish meaningful environmental action from "marketing fluff" or hype. Business needs more examples of meaningful environmental education efforts.

One participant recommended the article about business and environmental education, "Hold the Applause," by Jack Doyle of Friends of the Earth.

Where Do We Go from Here?

Work groups agreed that businesses need to be more proactive and to emphasize the ethic that being environmental stewards is good business by tying environmental responsibility to quality. In order for environmental education to work, key figures including CEOs must be involved. Top manager support for environmental training, for example, is critical to its recognition throughout the company. Corporations can make environmental education practices more attractive to all employees by sponsoring internal awards programs such as those at DuPont, 3M, and Dow. To make environmental education more immediately relevant to people in all sectors of the business community, it was suggested that the focus be broadened to include such issues as health and scarcity of natural resources and that programs focus on multi-cultural communication.

Workgroup members felt that the future of environmental education in the business community lies in increasing partnerships and coalitions with nonprofit organizations, community residents, and state and local government, including chambers of commerce. In some cases, corporations have adopted schools; one workgroup participant cited the DuPont "Delaware Teachers Project" as an example of a successful partnership.

Workgroup participants thought that attention should be divided between short-term goals (involving particular plans of action, such as starting a recycling program) and long-term goals (such as education about diminishing resources). It was voiced that small companies, in particular, need to become more involved with environmental education, and that more attention should be directed to the differences between businesses in terms of size, worker diversity, and other factors. Participants also suggested that business schools, and other institutions of higher education, build environmental education into their curricula.

Finally, workgroup members suggested that EPA adopt a business approach as it defines its objectives and goals for environmental education, using the concepts of accountability and the bottom line, and following up on projects to evaluate their effectiveness. Continuing feedback from participants is also extremely important.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Education in the Business Community, Workplace, and Marketplace?

The work groups concluded that EPA could help businesses establish environmental education programs and goals in five broad areas:

1. Foster partnerships. EPA could include the business community in its clearinghouse of information. It could also provide training to nonprofit organizations and local governments on how to get businesses involved in their environmental education efforts. Community meetings facilitated by regional EPA or local government contacts could help business communicate with residents about local environmental issues. EPA could also make some of its grants dependent on corporate sponsorship; grant writers would need to contact business about potential partnerships. Finally, EPA could serve as a broker to bring together businesses with organizations that already provide environmental education services, such as zoos, museums, and schools.

2. Provide incentives for environmental education programs. EPA could help make environmental education desirable to business by publicly recognizing businesses with effective environmental projects or programs. Businesses can use environmental education as a marketing tool to promote a positive image.

3. Sponsor regional environmental education conferences. To continue the dialogue begun at this conference, EPA could sponsor a series of conferences that include task- and issue-oriented followup. Some conferences could be specifically targeted to business and industry, including small business and labor representatives. These conferences could help define environmental education for the business community, and should be organized in such a way that participants are accountable for followup. Publicity for these conferences should also target businesses so that they are aware that their participation is needed.

4. Utilize universities and other institutions of higher education. The federal government could encourage all institutions of higher learning to include more environmental education coursework so that future employees and business leaders would have a background in environmental issues. Business schools, in particular, should require proficiency in or exposure to environmental literacy. EPA could also be involved in the training of current faculty, and facilitating the use of faculty expertise to spread environmental education to small and large corporations. Finally, EPA could recognize universities that have sound environmental practices.

5. Set an example. By using environmentally sound practices, EPA can provide both leadership and a model for businesses and other agencies. The Agency has already taken a lead with procurement and recycling programs at its headquarters. EPA could also help train all federal employees in environmental issues and practices and help to define every agency's role in environmental education.

The work groups concluded with a few additional suggestions:

- Speed up green labeling and life cycle analysis efforts to help with marketing consistency and cut down on hype.

- Provide more environmental education materials to businesses on compliance, pollution prevention, and cross-media issues. Make sure that regulations are in clear, simple language, so that small businesses can understand them.

- Use money from industry penalties for environmental education.

- Ensure the accountability of environmental education grantees through regional coalitions of schools, businesses, and local governments; or tie grants to corporate matching programs to involve businesses.

- Involve businesses in reaching consumers with environmental messages.

- Make available more information on corporate/community partnerships in environmental education to help the business community learn about successful programs.

Environmental Education in Minority and Multiethnic Communities

Facilitator: **Clarice Gaylord, Office of Human Resources and Management, U.S. Environmental Protection Agency**
Presenter: **Fenna Gatty, Searles Elementary School, New Haven Unified School District, Hayward, CA**

What Is the Current Status of Environmental Education in Minority and Multiethnic Communities?

These two work groups observed that minority and multiethnic groups have often borne the brunt of the country's environmental problems. For example, studies have shown that a majority of toxic waste sites and landfills have been located in minority and multiethnic communities. The workgroup facilitator pointed to a number of recent reports and meetings, including the October 1991 "People of Color Environmental Leadership Summit" in Washington, DC, that focused on health effects, risk assessment, and risk communication issues relevant to environmental equity.

Despite the environmental risks that minority and multiethnic communities have incurred, the work groups agreed that few programs in environmental education are directed toward or involve these communities. Some exceptions, however, were cited, including the Urban Habitat program from the Earth Island Institute in San Francisco,[27] the California Conservation Corps[28] (which is 50 percent minority), and the Anacostia Nature Trail program in Washington, DC, which involves students in grades kindergarten through twelve in outdoor, urban activities ranging from archeology to poetry. Participants said that both the National Park Service and the U.S. Forest Service also have material on cultural diversity and environmental programs. Most nature center and program participants, however, are still from white suburban areas, and many white schools are inundated with environmental materials, while minority schools are asking for more.

Workgroup participants discussed a number of barriers to implementing effective environmental education programs in multicultural communities. First, traditional approaches to environmental education have not worked well in these communities in the past. Holistic programs integrating technical and socioeconomic environmental issues need to be developed, and environmental programs need to be more community based. Few curriculum materials have been developed in languages other than English and Spanish, and existing materials have not reflected or considered cultural differences, priorities, or needs. Most urban students, for example, do not have access to natural areas. There have been too few minority or multicultural role models in the field of environmental education, and not enough incentives, such as scholarships and paid internships, to get minority students interested or involved. As a result, few minorities seek careers in the environment; thus, the cycle continues.

Another problem has been with the definition of environmental education. Programs are inconsistent as to whether to deal with the environment in purely scientific or technical terms or whether to explore its socioeconomic and societal aspects. Most workgroup participants, although not all, felt that the two are intertwined, and that while social issues were foremost for minority and multiethnic groups in the 1960s, environmental issues are critical in the 1990s.

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[27] Earth Island Institute, 300 Broadway, Suite 28, San Francisco, CA 94133, (415) 788-3666.

[28] California Conservation Corps, 1530 Capitol Ave., Sacramento, CA 95814, (916) 445-0307.

Where Do We Go from Here?

The work groups recommended that minority and multiethnic populations need to take a more active role and be consciously included in the environmental movement. The work groups emphasized that more community-based education programs were needed, which would involve parents, students, counselors, and teachers, as well as churches and other groups in the community. Environmental education programs also need to be customized to deal with the environmental issues that affect individual communities. Some participants suggested that such programs as Peace Corps and Vista can be used as routes to reach minority communities with environmental information.

One of the most important aspects of improving environmental education in minority communities is to make the environment more relevant to them. This can be done by increasing access to natural areas through funding for field trips and camping for urban children and urban reclamation projects, and expanding the definition of the environment to include urban habitats and health issues that affect everyone.

The work groups cited a couple of programs that could be used as models for other communities. In New York City, the 4-H program "Water Proof" provides students with the funds to develop their own water projects. In another program, the YMCA Earth Corps Clubs[29] in Seattle involve students in 45 schools; 55 percent of the clubs are minority students. In this program, students pick their own projects, such as planting a tree or starting a recycling program in a minority community for Earth Day.

Resources and training were cited as two other pressing needs. Grassroots efforts require funding through grants or partnerships with schools, industry, government, or nonprofit groups. More teachers, administrators, and other school personnel must also receive in-service training and curriculum development in environmental areas. Some workshop participants felt that a mandate is needed, such as the State of Wisconsin's mandate requiring environmental education in grades kindergarten through twelve.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Education in Minority and Multiethnic Communities?

The work group felt that EPA and the federal government could be most useful in assisting grassroots efforts in minority and multiethnic communities with training, funding, and information dissemination. The federal government can help ensure that teachers of differing races and backgrounds are a part of and can claim ownership in whatever environmental strategies are developed. Role models who live within the community should be sought as leaders. The government can help increase training opportunities in technical areas, and in colleges and universities, and support in-service training in environmental education that emphasizes sensitivity and cultural diversity. Workgroup members also suggested that the government provide consultation services to sensitize environmental educators outside of multicultural communities to issues of cultural diversity and environmental racism. The government could also sponsor small workshops for parents and families to acquaint them with environmental practices and ideals, with a consideration for their priorities and needs.

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[29] YMCA Earth Corps, 909 Fourth Avenue, Seattle, WA 98104, (206) 382-5336.

To assist with funding, EPA should hold grantsmanship workshops to help people in multicultural communities become more competitive for the small grants that will be available under the National Environmental Education Act. They should also simplify the small grant applications and include examples, so that grants are equally accessible to all regardless of language or educational backgrounds. EPA also could take the lead in encouraging other agencies and industry to form partnerships that support environmental education efforts in minority and multicultural communities. In a partnership between EPA and the Duke Ellington School of the Arts in Washington, DC, a $40,000 grant allowed seniors to teach elementary students about pollution prevention and household hazardous waste through posters, videos, and other artistic media during their senior year. Head Start could also be used as a model for a successful community-based action program to improve the environment, teaching concepts like recycling and pollution prevention to children at a young age.

Finally, in the area of materials development and dissemination, some workgroup participants recommended that EPA focus curriculum efforts on creating materials that are sensitive to gender and ethnicity. There was, however, some disagreement about EPA's role in the creation of curricula versus the dissemination of existing materials. Work groups agreed that EPA should ensure that environmental education materials geared toward minorities and multiethnic communities are readily identifiable and accessible on EPA's clearinghouse data base. EPA has a list of vendors who can advise schools on cultural diversity; they should publicize this list and make it available.

The work group recommended that EPA involve state and local government groups in developing a list of recommendations to present to President Bush. The creation of the 16-agency Federal Environmental Education Task Force and the National Environmental Education Advisory Council of nonfederal environmental education experts were seen as positive first steps.

Environmental Education in Government

Facilitator: **Lynn Hodges, Environmental Education Section, Tennessee Valley Authority**

What Is the Current Status of Environmental Education in Government?

The two government work groups felt that environmental education has recently surfaced as a goal in business and government, but that this goal has so far been reflected more on paper than in action. Local governments are realizing that people, including elected officials, need to be educated about local environmental issues, and many states are moving toward the development of statewide education plans. Offices for coordinating environmental education efforts are being established at the national, state, and local level.

Some trends that are beginning to surface include growth in the areas of partnerships, information, and audience. More and more organizations that deliver environmental education are turning to partnerships as a way to fund and support projects. Limited budgets have forced a greater coordination and consolidation among agencies, academia, and corporations. Partnerships between government agencies as well as among countries, such as current efforts to develop a trilateral environmental education agreement among the United States, Mexico, and Canada, are growing. Nongovernmental organizations and corporations have also formed partnerships to develop and deliver educational materials. Workgroup members identified the delivery of environmental education by nonfederal groups both as a growing trend and a major resource. They also felt that there was a need for greater cooperation among federal agencies.

The work groups noted the tremendous growth in the amount of environmental education materials and information available. Participants acknowledged that these materials vary in quality and in perspective. Many activist organizations and special interest groups, for example, offer materials with a specific agenda and limited or narrow perspective. In addition, little material is reaching multiethnic and urban populations. The EPA clearinghouse is one response to both the information glut and the distribution problem, and could serve to merge this resource base into a form that anyone can access. Participants, however, still had many questions concerning the clearinghouse and were reluctant to voice their support until they knew more about its intent and the procedures for its use.

The audience for environmental education materials is also expanding beyond teachers and students, to include the work force and government employees. Because the audience is so diverse, it is an important challenge to forge a common definition of environmental education and a vocabulary that is free of jargon and understandable to all levels.

The work groups recognized that, in many ways, the federal government, including EPA, is behind the trend setters in environmental education. Government agencies suffer from lack of coordination of efforts, often resulting in overlaps and duplications. Workgroup participants also stressed that information distribution and education are not the same thing; too many government agencies emphasize the development and distribution of materials, without proper training and followup to make sure education is taking place. The work groups agreed that awareness leading to a change in behavior, such as in consumerism, should be a goal of environmental education.

Barriers to more effective environmental education identified by the work group included insufficient funds, fragmentation of issues to be addressed, lack of trained personnel, insufficient quality control, few credible studies, lack of information in textbooks, not enough direct involvement by educators, and resistance from groups who do not want to be educated.

Where Do We Go from Here?

The facilitator noted that the federal government's role is to listen and respond to needs, recognizing that asking the question, "What do you need?" is more important than "telling you what we have." Functioning effectively in this role will involve working together with academia, business, and other agencies to develop a common language, and taking the lead in developing a vision and setting goals. The government can then help environmental educators promote these messages to a diverse audience.

The work groups recognized that partnerships with government are an important avenue of support, emphasizing that government could identify and support quality programs as well as showcase local initiatives that work and assist in their replication. The work groups pointed out that some of the best environmental education success stories are at the local level. The government could provide a vehicle for spreading this information to other communities, as well as helping to link local environmental education efforts with local business support. One workgroup participant pointed out that direct contact with teachers is essential and cited the example of Chattanooga, TN, which appoints one teacher in each school as a contact person responsible for distributing environmental education materials to all others in the school.

The group felt that connecting environmental education to the workplace was critical, and that the government could help by offering training to managers and supporting teachers and students in training for environmental careers. State and local agencies also could provide incentives for minority and urban students in high schools and colleges by active recruitment in environmental positions.

The work groups felt that government agencies need to market environmental education to business in business terms, by demonstrating the link between environmental performance and value added, making it part of total quality management.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Education in Government?

The work groups felt that a major service the federal government could provide would be a directory of current environmental education efforts in the federal government. Environmental programs and materials could be cross referenced against the needs identified at this conference. One participant suggested that EPA create a guide for how and where to obtain funding from federal agencies across the country.

The work groups suggested numerous ways the National Environmental Education Act should be used to support networks. The federal government could play a key role in creating and supporting networks and partnerships with academia, industry, and nongovernmental organizations for gaining access to funds and information. Because EPA's funds are limited, it was suggested that the Agency earmark certain grants for partnership projects. One workgroup member also suggested creating a scholarship fund for teachers specializing in environmental education. Participants suggested that government tap the resources of other professionals, such as engineers and librarians, to support environmental education, whether through money, projects, staff, work opportunities, or internships. EPA could also provide technology links that allow environmental educators to search for accurate technical information, share ideas, and generally keep in touch. One participant suggested the creation of a toll-free number or hotline for information or advice.

Workgroup members supported EPA's plans for regional workshops, and also suggested the organization of smaller environmental "summits" throughout the country, which would be accessible to educators who do not have the funds to travel to major conferences. There was concern about the decision to limit participation at this conference, and members felt that participation at future meetings, including regional ones, should be more open.

Some participants expressed concern that the National Environmental Education Advisory Council did not represent an adequate distribution of geographical and cultural backgrounds, attitudes, and interests. The Council has been selected by EPA to provide outside expert advice on how EPA implements its new environmental education program.

The work groups felt strongly that environmental education needed to be put on the agenda for the U.S. Department of Education's "America 2000" strategy to improve public education, and be promoted as an added goal—"the seventh goal for the seventh generation"—throughout America 2000 communities.

The federal government could also help with quality control of environmental education materials, by establishing standards and guidelines for differentiating quality education from propaganda or hype. One workgroup member suggested that EPA create a national diffusion network that would standardize materials and provide instructions on how to use them.

Environmental Education for Teachers

Facilitators: **Judy Braus, Office of Training and Program Support, U.S. Peace Corps**
Arva Jackson, Educational Affairs Division, National Oceanic and Atmospheric Administration
Suzanne Kircos, Office of Public Affairs, U.S. Environmental Protection Agency, Region 5

What Is the Current Status of Environmental Education for Teachers?

The three work groups on this topic felt that teacher education in environmental education varies widely across the country, from nonexistent to excellent. Although some states, such as Wisconsin and Kentucky, have teacher education mandates for environmental education, the norm is that they do not. Overall, teachers are not well versed in environmental issues and technologies. The teaching profession is characterized by a high rate of turnover, with a constant stream of new teachers who need training. Even among the teacher education programs that are available, most have not been evaluated for their effectiveness. Another problem is that too many environmental education curricula and supplementary materials arrive in school systems unaccompanied by training, so that teachers do not know how to apply them effectively in the classroom. Most of the teaching in environmental education gets done because of individual teacher initiative rather than as the result of instruction or requirements.

The work groups thought that teacher education in general suffers from lack of money, time, and commitment, and that low salaries and lack of respect for teachers offer little incentive for innovation. Also, the job market for teachers specializing in environmental education is scarce.

Where Do We Go from Here?

The work groups had some strong suggestions of what should be done to improve teacher education. Many felt that all teachers needed to be trained in environmental education and that standards for instruction should be established at the local and state levels, leading to a "teach well or perish" attitude with respect to environmental education. There was some debate among the work groups as to whether teacher education in environmental education should be mandated at the state level, but most agreed with the Wisconsin model of requiring environmental literacy.[30] Workgroup members also felt that school districts should consider a K-14 model when planning environmental education programs, so that issues and concepts could be carried over from high school to college.

Work groups felt that training needs to take place both preservice and in-service. At the university level, some participants suggested making use of current effective models where teachers are trained in a specific content area as undergraduates, then must earn a 1-year teaching certification at the master's level, which includes an environmental education component. Others suggested a general environment and society course for all bachelor's degree candidates. Participants suggested bringing in exemplary teachers to demonstrate skills and methods as part of preservice instruction. Another suggestion was to encourage land grant universities to review and adapt the Tufts University[31] program to implement a campus-wide interdisciplinary approach to environmental literacy.

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[30] Wisconsin Center for Environmental Education, College of Natural Resources, University of Wisconsin-Stevens Point, Stevens Point, WI 54481-3897, (715) 346-4973.

Work groups concurred that a better system needs to be developed to train existing teachers and that in-service training in environmental education could be linked to a certification requirement. Some questions were raised as to how this "re-training" would take place, whether on a district-by-district or school-by-school basis. Some participants advocated a team approach using master teachers to work with teachers in developing their own projects and courses, to help create ownership. Another suggestion was to make use of science camps or parks and museums to learn concepts and activities, which could then be practiced with students.

The work groups also had some specific suggestions about the kind of training that is needed, including:

- How to adapt, localize, and regionalize existing materials and models.
- How to facilitate environmental education in the classroom using techniques of conflict resolution.
- How to integrate cultural diversity and sensitivity into environmental education instruction.

To continue and expand the dialogue concerning teacher education issues, workgroup participants want to involve more teachers as decision-makers in conferences and policy sessions. They felt that in future regional and other conferences, there should be a greater representation of teachers than were perceived to be present at this conference. Leadership institutes for educators across the country were also suggested as ways to help prepare teachers to serve in advisory roles and implement environmental education programs at the local level.

Work groups also discussed funding options for teacher education programs. Some participants suggested concentrating on district or regional grants, while others pointed to opportunities in the private sector including utility support of programs, adoption of schools by local businesses, and utilization of business and local agency leaders as teachers.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Education for Teachers?

The work groups advocated that the role of EPA and the federal government be as an expediter, disseminating existing information and facilitating networking and partnerships. They felt strongly that EPA should not develop new environmental education curricula or programs at the national level, but should instead use existing materials, networks, and experts in the field. One participant suggested that EPA could publish and distribute guidelines on how to develop local environmental education materials or how to adapt existing materials at the local level. Another suggestion was that EPA make available a summary of what colleges and universities are doing nationwide in teacher education along with effective models, such as the Tufts University program.

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[31] Tufts Environmental Literacy Institute (TELI), Tufts University, 474 Boston Avenue, Medford, MA 02155, (617) 381-3452.

Other suggestions included the establishment of a toll-free line or a cable television network for updating teachers on the environmental education activities of federal agencies.

One work group suggested that EPA create two councils of teachers, one elementary and one secondary, to advise on issues related to environmental education. These councils could be consulted about all of the ideas above as well as on how materials should be presented in the EPA clearinghouse. Guidance on how to infuse these materials into existing curricula would be very helpful.

The federal government could also encourage textbook publishers to incorporate environmental information into their products to assist teachers in presenting material, and to encourage colleges and universities to make environmental literacy a graduation requirement.

EPA and the federal government are also needed to provide funding for innovative teacher education programs and encourage partnerships between federal funding agencies, such as the U.S. Departments of Education and Health and Human Services. Participants suggested that in funding decisions, emphasis be given to local initiatives and student action. The work groups also felt that federal government funding should support teacher education that is holistic and interdisciplinary, rather than strictly math or science based.

Finally, EPA should continue to stress collaborative efforts and promote environmental education as the "best citizenship education program" available.

Environmental Education in Entertainment and the Media

Facilitator: **Tom Levermann, Soil Conservation Service, U.S. Department of Agriculture**

What Is the Current Status of Environmental Education in Entertainment and the Media?

This work group found that entertainment and the media have emphasized environmental awareness instead of environmental education that leads to personal, organizational, or community action. There is a lack of dimension in most of the media's treatment of environmental issues, both in how the environment is portrayed and in the educational applicability of programs. Participants also felt that the media, in general, tends to look at problems rather than solutions.

Television and other media overuse violence and anthropomorphism as ways to convey environmental messages and often aim their campaigns and programming toward children. Workgroup participants suggested that the media often doesn't know where to go for accurate, balanced information, and should turn to the grassroots level for environmental programming opportunities.

The environment is not a part of daily media and entertainment programming, yet some messages, such as the importance of recycling, are emerging. The media lacks followup, and little assessment has been made of the effects of the media and entertainment on people's attitudes and actions. The environmental information available from the media is also not used as effectively as it could be, because teachers are not trained in how to take advantage of all of the multimedia technologies available.

Where Do We Go from Here?

The work group recognized that a media infrastructure exists and that people must build partnerships between the media and agencies, organizations, and educators. It was also stressed that organizations sponsoring or co-sponsoring a media activity must accept accountability for the activity's content. However, concern was voiced that agencies and educators should avoid becoming censors.

Workgroup participants also felt the need to develop national criteria and guidelines to exercise quality control over the information in the media. These criteria would need to address:

- A definition of the environment and environmental programming.
- The types and availability of multimedia technology, such as videotaping and computer-interactive educational software.
- The educational aspects of environmental programs.

The facilitator felt that building a file of successful collaborations would be useful.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Education in Entertainment and the Media?

The federal government and EPA could develop criteria and guidelines for environmental programming. Federal agencies need to ensure that environmental messages publicized as education really are education rather than hype or propaganda. The new 11-member National Environmental Education Advisory Council could take the lead in this effort.

Federal government agencies, including EPA, also should be sure that media messages about the environment are meeting their needs. The federal government can develop strategies for infusing all forms of media and entertainment with environmental information. To assist the industry in producing these materials, EPA could make the media aware of resources available to them at the local, state, regional, and national levels, including the EPA clearinghouse.

EPA also could help the media work together with other industries, nonprofit organizations, and academia by encouraging partnerships, such as the one among the U.S. Department of Energy, Amoco Corporation, and WTTW Public Television Station, Chicago, which resulted in the Bill Kurtis production, "The New Explorers."[32] EPA also could assist people in federal government agencies and classroom teachers in taking advantage of media offerings by developing training programs in current technologies.

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[32] Kurtis Productions, 400 West Erie, Suite 301, Chicago, IL 60610, (312) 951-5700.

Environmental Health Risk Education

Facilitator: John McLachlan, Division of Intramural Research, National Institute of Environmental Health Sciences

What Is the Current Status of Environmental Health Risk Education?

This work group opened by discussing the definitions inherent in the concept of environmental health risk education:

- Environmental. As applied to human health risk, the work group noted the need to define this area more broadly than hazardous agents to include infectious agents, natural toxicants, diet, stress, economic conditions, and social interactions.

- Environmental Health. This term implies the interface and interaction between the total environment and human health. The work group expressed some concern that this issue is often overlooked when teaching about the environment. The group noted that there now exists an enormous gap between the environmental community and the health community, which education needs to bridge.

- Environmental Health Risk. This term was defined as the best judgments at a given time about the proportional chance, or probability, of an adverse health outcome associated with the environment.

- Environmental Health Risk Education. The work group felt that environmental health risk education can lead to empowerment because the more someone knows about a process, the better able he or she is to judge the risk. Thus science literacy is an important, but not the only, underpinning of environmental health risk assessments.

The work group felt that very little environmental health risk education is taking place currently, and that it is the least taught of environmental issues. In kindergarten through twelfth grade curriculum, it is almost nonexistent. In fact, even in medical school, there is little instruction in this area. Still, awareness is increasing and some programs and agencies are taking the lead in environmental health risk education programming.

EPA, for example, recently initiated a program, involving several university systems, to evaluate public perception of risk and identify the best educational strategies. As part of this study, EPA surveyed subjects to find out who the public trusts, whether health professionals or educators. EPA also held an environmental health risk education workshop to determine what to teach in the classroom and to identify barriers to education, including the decentralization of education, the lack of resource manuals, and the wide gap in understanding.

Other programs in environmental health risk education include:

- The National Institutes of Health (especially the National Institute of Environmental Health Sciences) and the National Science Foundation have made available grants to fund projects related to environmental health risk education.
- Pennsylvania State University has a health risk program on ground water.
- The Deafness Institute is developing a video on the impact of the environment on the ear, nose, and throat.

Where Do We Go from Here?

The work group felt that environmental health should be part of environmental education, especially in the sciences. Not only is science education important to risk education, but conversely, concerns about risk can drive scientific research. Workgroup participants expressed that science can be influenced by a regard for health issues, but people also can become desensitized if they feel that everything can harm them. Environmental health risk education must strike a balance which provides accurate, realistic assessments of relative risks and hazards.

Participants also felt that teachers need to be given the training and tools to teach environmental health risk, and that such instruction should not be solely in the sciences. Although this subject should be part of science, and especially biology curricula, it needs to be expanded to encompass economics and sociology as well as other academic areas. Environmental health risk education materials also need to be packaged so that teachers who are already overworked can infuse them into existing materials.

The work group agreed that professionals need to get involved in science and environmental education by speaking up and working as community resources and educators. For example, physicians, with their expertise, should be involved in educational efforts that deal with disease and dysfunction stemming from environmental causes. The work group felt that most physicians don't understand relative risks and environmental hazards, because they don't see the environment as part of medical responsibility. Some people suggested that environmental medicine should be a specialty. Participants suggested approaching clergy, as figures of respect and influence in minority and inner city areas, to play a role in environmental health risk education.

The work group noted the importance of addressing multiple target audiences including the very young, adolescents, adults, the aging, and pregnant populations, each with their own concerns, needs, and vulnerability to risk. Economically disadvantaged communities, as well as those that are ethnically and geographically diverse, also need to receive environmental health risk information targeted to their needs and in an easy-to-understand language and format. The work group discussed the issue of environmental equity, expressing that often minorities and disadvantaged groups have the greatest need for environmental health information because they face some of the greatest risks in their environment.

The work group also stressed that environmental risks are not only associated with toxic waste and pollutants; Lyme disease, for example, is an environmental risk associated with nature trips.

Finally, workgroup members felt that education should be a two-step process: first, people must be given information; then they need tools for change.

What Should Be the Role of EPA and the Federal Government in Supporting Environmental Health Risk Education?

The federal government can promote partnerships among government agencies, educators, the private sector, and health professionals to help fund and develop environmental health risk education programs. EPA can also make available grants geared to this specific area of environmental education and promote projects that deal with environmental health risk. EPA can also get involved with curriculum development.

SECTION FIVE

SPECIAL PRESENTATIONS

TIME/Warner Environmental Education Campaign

Warner Bros. Senior Vice President of Worldwide Merchandising, John Heinritz, and Vice President of Animation, Kathleen Helppie, presented an overview of their environmental education campaign featuring Looney Tunes characters Tweety and Sylvester. The presentation of the "Tweety Global Patrol" on Wednesday evening, November 20, included videotape excerpts and slides previewing the upcoming campaign.

The "Patrol" is an innovative and ambitious environmental education program being jointly developed by EPA, the Alliance for Environmental Education, and TIME/Warner. The campaign will initially focus on pollution prevention, recycling, and conservation issues. It is intended to provide youngsters with the necessary skills to make sound environmental choices, influence their families' environmental behavior, and help promote environmental stewardship to the general public.

Educational components are currently being designed by a national committee of environmental educators and will be field tested in spring 1992. The entire "Tweety Global Patrol" program will roll out in September 1992 with a massive marketing, advertising, promotion, and publicity campaign designed to further promote environmental education to the nation. For more information on this program, contact Heather Schoen, Multi-Media Services, Office of Communications, Education, and Public Affairs, U.S. Environmental Protection Agency, 401 M Street, S.W. (A-107), Washington, DC 20460, 202-260-2043.

The New Explorers PBS Television Series

Richard Stephens, Associate Director of the U.S. Department of Energy (DOE), Office of Science and Education, and Bill Kurtis, President of Kurtis Productions, presented the PBS television series *The New Explorers* at a luncheon on Thursday, November 21. The conference presentation included clips of episodes from the upcoming season.

A new season of 13 half-hour programs of *The New Explorers* will premiere in January 1992. These episodes will continue in the tradition of the original season, profiling people who are seeking to expand the frontiers of science, nature, and the environment. Award-winning broadcast journalist Bill Kurtis hosts each of the programs and through his eyes, the viewers are able to follow each "new explorer" on his or her expeditions to the cutting edge of discovery. Amoco Corporation and Waste Management, Inc. are the underwriters of this partnership effort.

The second season of *The New Explorers* will again be enhanced by a national educational component developed by the Department of Energy through Argonne National Laboratory. DOE has invested $1.5 million in this project to date and has committed another $532,000 for development, production, and distribution of educational materials in the second year of the series. In addition, DOE is building a network for the educational program by drawing in other national laboratories from different parts of the country to help train teachers and work with students. These labs are Brookhaven, Upton, New York; Lawrence-Berkeley, San Francisco; Los Alamos, New Mexico; Oak Ridge, Tennessee; and Pacific Northwest, Richland, Washington. The Science Explorers Program has become the major initiative for the Department of Energy and its Secretary, James Watkins, in combating science illiteracy and challenging students to take up science as a career. In its first year, the project had exposure in more than 100,000 schools across the country.

For more information on this program, contact Kassie Andrews-Weller, Office of Science and Education, U.S. Department of Energy, 202-586-8949.

APPENDIX A

CONFERENCE AGENDA

BUILDING A SHARED VISION FOR ENVIRONMENTAL EDUCATION

Sponsored by the U.S. Environmental Protection Agency
in cooperation with the Federal Task Force on Environmental
Education

The Omni Shoreham Hotel
Washington, DC
November 19-21, 1991

AGENDA

TUESDAY, NOVEMBER 19	**ENVIRONMENTAL EDUCATION: ADDING THE 2 E'S TO THE 3 R'S**
4:00PM-9:00PM	REGISTRATION
4:00PM-5:00PM	SPEAKER/FACILITATOR MEETING
7:00PM-8:30PM	GENERAL SESSION
	WELCOME - Lewis Crampton, Associate Administrator for Communications, Education, and Public Affairs, U.S. Environmental Protection Agency (EPA)
	ENVIRONMENTAL EDUCATION AND AMERICA 2000 David Kearns, Deputy Secretary, U.S. Department of Education
	ENVIRONMENTAL EDUCATION AT THE U.S. DEPARTMENT OF THE INTERIOR - Manuel Lujan, Jr., Secretary, U.S. Department of the Interior
	KEYNOTE ADDRESS - *Building a Shared Vision for Environmental Education* F. Henry Habicht, Deputy Administrator, U.S. EPA
	ENVIRONMENTAL EDUCATION PRIORITIES AT EPA William Reilly, Administrator, U.S. EPA (Video)
8:30PM-10:00PM	SOCIAL HOUR WITH CASH BAR
WEDNESDAY, NOVEMBER 20	**ENVIRONMENTAL EDUCATION: HOW WE GOT HERE**
7:00AM-5:00PM	REGISTRATION DESK OPEN
10:00AM-7:00PM	EXHIBITS OPEN TO CONFERENCE ATTENDEES AND THE PUBLIC

WEDNESDAY, NOVEMBER 20 **CONTINUED**

8:00AM-9:30AM GENERAL SESSION

OPENING REMARKS - Barbara Zartman, Deputy Director, U.S. Peace Corps

HISTORICAL PERSPECTIVE ON ENVIRONMENTAL EDUCATION - Senator Gaylord Nelson, Counselor, Wilderness Society

NEW FEDERAL LAW TO SUPPORT ENVIRONMENTAL EDUCATION
- *Goals and Priorities in Implementing NEEA*
  - Lewis Crampton, Associate Administrator for Communications, Education, and Public Affairs, U.S. EPA
- *The National Environmental Education and Training Foundation*
  - Robert Herbst, Chairman, Interim Board of Trustees

9:30AM-10:00AM COFFEE BREAK

10:00AM-12:00PM GENERAL SESSION

10:00AM-11:00AM PANEL PRESENTATION - *Successful Partnerships to Develop and Deliver Environmental Education in the U.S.*

Moderator: Walter Bogan, Director, Science Resources for Schools, American Association for the Advancement of Science

Randall Champeau, Director, Wisconsin Center for Environmental Education, University of Wisconsin, Stevens Point

Carol Muscara, Director, Audubon Science Institutes, National Audubon Society

Patricia Borkey, Teacher, Mathematics and Science Center, Richmond, Virginia

Lillian Kawasaki, General Manager, Los Angeles City Environmental Affairs Department

Herbert Thier, Director, Chemical Education for Public Understanding Program, University of California, Berkeley

11:00AM-11:15AM UNITED NATIONS CONFERENCE ON THE ENVIRONMENT AND DEVELOPMENT - Andrew Wolf, Special Assistant to the Director, United Nations Environment Program

11:15AM-12:00PM PANEL PRESENTATION - *Successful Partnerships to Develop and Deliver Environmental Education Globally*

Moderator: Lynn Elen Burton, Director of Environmental Education, Environment Canada

WEDNESDAY, NOVEMBER 20	**CONTINUED**
11:15AM-12:00PM	GENERAL SESSION - PANEL PRESENTATION - continued Augusto Medina, Senior Program Officer for Latin America and the Caribbean, World Wildlife Fund Anthony Cortese, Dean of Environmental Programs, Tufts University Nan Little, Director, YMCA Earth Corps William Eblen, President, Rene Dubos Center for Human Environments
12:00PM-2:00PM	LUNCH AND EXHIBITS (ON OWN)
2:00PM-3:00PM	GENERAL SESSION
2:00PM-3:00PM	PANEL PRESENTATION - *Successful Partnerships to Finance Environmental Education* Moderator: Kathy McGlauflin, Vice President for Education, American Forest Foundation Thomas Benjamin, Staff Director, Alliance for Environmental Education Valerie Williams, Supervisor of Program Development and Management in Educational Services, Southern California Edison Annette Berkovits, Director of Education, Bronx Zoo Madeline Strong, Executive Director, Florida Advisory Council on Environmental Education
3:00PM-3:30PM	COFFEE/SODA BREAK
3:30PM-5:00PM	CONCURRENT QUESTION AND ANSWER SESSIONS BASED ON PANEL PRESENTATIONS Panel Members and Moderators Group 1 - *Environmental Education in the U.S.* Group 2 - *Global Environmental Education* Group 3 - *Financing Environmental Education*
5:00PM	ADJOURN
5:30PM-7:00PM	RECEPTION WITH CASH BAR IN EXHIBIT HALL

WEDNESDAY, NOVEMBER 20 **CONTINUED**

7:00PM-9:00PM BANQUET: VIDEO PRESENTATION OF TIME-WARNER ENVIRONMENTAL EDUCATION CAMPAIGN

GUEST SPEAKERS - John Heinritz, Vice President of International Marketing Operations, Warner Brothers, Inc. and Kathleen Helppie, Vice President of Production and Administration, Warner Brothers Classic Animation, Warner Brothers, Inc.

THURSDAY, NOVEMBER 21 **ENVIRONMENTAL EDUCATION: WHERE DO WE GO FROM HERE?**

8:00AM-2:00PM EXHIBITS OPEN TO CONFERENCE ATTENDEES AND THE PUBLIC

8:00AM-8:30AM GENERAL SESSION

OPENING REMARKS - James Moseley, Assistant Secretary for Natural Resources and Environment, U.S. Department of Agriculture

ENVIRONMENTAL EDUCATION: WHERE DO WE GO FROM HERE? - Louis Iozzi, Dean of Academic and Student Affairs, Cook College, Rutgers University

8:45AM-11:45AM CONCURRENT WORKING GROUP DISCUSSIONS

MAKING ENVIRONMENTAL EDUCATION A PRIORITY AND ENSURING EFFECTIVE DELIVERY IN:

Schools (Kindergarten - Grade 12)
Colleges and Universities
Museums, Nature Centers, and Parks
Community-Based Youth Programs
Adult Continuing Education Programs
Nonprofit Organizations
Business Community, Workplace, and Marketplace
Minority and Multi-Ethnic Communities
Government
Teacher Education
Media and Entertainment World
Environmental Health Risk Education

8:45AM-10:00AM WORKING GROUP DISCUSSIONS - SESSION 1

10:00AM - 10:30AM COFFEE BREAK

10:30AM-11:45AM WORKING GROUP DISCUSSIONS - SESSION 2

NOTE: **For location and time of your assigned group for both sessions, please refer to Work Group Schedule and Room Assignments Sheet attached to this agenda.**

THURSDAY, NOVEMBER 21	**CONTINUED**
12:00PM-2:00PM	LUNCHEON: VIDEO PRESENTATION OF *THE NEW EXPLORERS* PBS TELEVISION SERIES
	OPENING REMARKS - Richard Stephens, Associate Director, Office of University and Science Education, U.S. Department of Energy
	GUEST SPEAKER - Bill Kurtis, President, Kurtis Productions, and host of the *The New Explorers* PBS Series
2:00PM-4:00PM	GENERAL SESSION
	OPENING REMARKS - Frank Young, Deputy Assistant Secretary for Health, Science, and Environment, U.S. Department of Health and Human Services
	OVERVIEW OF ENVIRONMENTAL EDUCATION ACTIVITIES IN MEXICO AND THE TRI-LATERAL AGREEMENT AMONG THE U.S., MEXICO, AND CANADA - Alejandro Diaz Camacho, Director General of Environmental Education, Ministry of Urban Development and Ecology, Government of Mexico
	SUMMARY REPORTS OF WORKING GROUP DISCUSSIONS
	CLOSING REMARKS - Lewis Crampton, U.S. EPA
4:00PM	ADJOURN

APPENDIX B

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BUILDING A SHARED VISION FOR ENVIRONMENTAL EDUCATION

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November 19-21, 1991

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APPENDIX C

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APPENDIX D

LIST OF EXHIBITORS

BUILDING A SHARED VISION FOR ENVIRONMENTAL EDUCATION

A conference sponsored by the U.S. Environmental Protection Agency
in cooperation with the Federal Task Force on Environmental Education

THE OMNI SHOREHAM
WASHINGTON, DC
NOVEMBER 19-21, 1991

LIST OF EXHIBITORS

ORGANIZATION

Air & Waste Management Association
America's Clean Water Foundation
American Forest Foundation/Project Learning Tree
American Forestry Association
American Lung Association
Audubon Science Institutes
Center for Marine Conservation
Dow Chemical Company
Edison Electric Institute
Environment Canada
Environmental Hazards Management Institute
Environmental Media Corporation
Izaak Walton League of America/Save Our Streams Program
Louisiana Nature & Science Center
Management Institute for Environment & Business
Minnesota Office of Environmental Education
Montclair State College/New Jersey School of Conservation
National Audubon Society
National Geographic Society
Pocono Environmental Education Center
R.I. DuPont
Renew America
South Carolina Educational Television
Tufts University/Lincoln Filene Center
U.S. Department of Agriculture
U.S. Department of Commerce/National Oceanic and Atmospheric Administration
U.S. Department of Education
U.S. Department of Energy
U.S. Department of Health and Human Services
U.S. Department of Interior
U.S. Environmental Protection Agency
U.S. Information Agency
U.S. Peace Corps
University of California at Berkeley/Chemical Education for Public Understanding
University of Northern Iowa
Virginia Department of Game and Inland Fisheries
Water Pollution Control Federation
The Western Watercourse
The Wilderness Society
Wisconsin Department of Natural Resources

APPENDIX E

SPEAKER AND PANEL BIOGRAPHIES

BIOGRAPHIES FOR SPEAKERS

Lewis Crampton

Lewis Crampton is Associate Administrator for Communications and Public Affairs for the U.S. Environmental Protection Agency. He serves as the Agency's liaison to constituent groups and directs public affairs, environmental education, publications, press and community relations. Mr. Crampton led the EPA's 90-day management review of the Superfund program, resulting in a major new blueprint for the administration of this complex program. In an earlier tour of duty at the Agency, Mr. Crampton served as the senior agency official in charge of program evaluation and management systems; as acting director of the Office of Standards and Regulations; and as acting director of the Office of Solid Waste and Emergency Response.

Alejandro Diaz Camacho

Alejandro Diaz Camacho is the Director General of Environmental Education, Ministry of Urban Development and Ecology for the government of Mexico. He is currently involved in representing his government in discussions with the U.S. and Canada in developing a trilateral environmental education agreement.

F. Henry Habicht

Hank Habicht is the Deputy Administrator of the U.S. Environmental Protection Agency. He has been involved in environmental issues since 1981, at the U.S. Department of Justice, in private law practice, and as a public servant and private counselor. He has served on the Board of Directors and Executive Committee of the Environmental Law Institute, on the pro bono advisory panel for the Chesapeake Bay Foundation, and has chaired the American Bar Association Toxic and Environmental Tort Committee.

John Heinritz

John Heinritz is Vice President of International Operations for Warner Brothers Consumer Products. He is responsible for the strategic development, marketing, and implementation of consumer product licensing for Warner Brothers throughout the world. Prior to joining Warner Brothers he served as Divisional Vice President of International Marketing Operations for Polaroid Corporation.

Kathleen Helppie-Shipley

Kathleen Helppie-Shipley is Vice President of Production and Administration for Warner Brothers Classic Animation. She is currently Executive Producer of "The Bugs Bunny & Tweety Show," and Producer of the afternoon cartoon show, "Merrie Melodies Starring Bugs Bunny & Friends." Her producer/production credits include over 100 commercials, public service announcements, prime-time network specials, animated shorts, and feature films.

Robert Herbst

Robert Herbst is chairman of the U.S. National Environmental Education and Training Foundation, which grew out of the National Environmental Education Act. He is also president of the Lake Superior Center, a nonprofit organization formed to bring global water issues to public attention. From 1977 to 1981 Mr. Herbst was Assistant Secretary and Acting Secretary for Fish, Wildlife, and National Parks at the Department of the Interior.

Louis Iozzi

Louis Iozzi is Dean of Academic and Student Affairs at Cook College, Rutgers University. He is a past president of the North American Association for Environmental Education. He has taught at all levels, from elementary through graduate schools. He is involved in research on the moral aspects of problem-solving, and decision-making related to issues in science and environmental education.

David Kearns

David Kearns serves as Deputy Secretary of Education and is a member of the President's Education Policy Advisory Committee. He advises the Secretary of Education on all major program and management issues and oversees the daily operations of EPA and its 4,500 employees. Prior to joining the Department of Education, Mr. Kearns was chairman of the Xerox Corporation and vice president in the data processing division of International Business Machines Corporation.

Bill Kurtis

Bill Kurtis has spent more than 20 years as a broadcast journalist, working for CBS News, and most recently for PBS as host of *The New Explorers*. This series focuses on the human drama behind today's explorations as it follows scientists and innovators on the cutting edge of discovery. Mr. Kurtis' work has been honored with several television awards, including the George Foster Peabody, the duPont Columbia, and the Overseas Press Club, as well as national and local Emmys.

Manuel Lujan, Jr.

Manuel Lujan is the 46th Secretary of the Interior. His political career includes 20 years of service in the House of Representatives, where he co-sponsored seven major environmental protection bills, including the Clear Air and the Clean Water Acts. At the Department of Interior he has established the Interior Council on Global Climate Change to further strengthen the Department's leadership role in scientific research, and has led efforts for the U.S. ban on the importation of African elephant ivory to help stem the rapid decline of this species.

James Moseley

James Moseley serves as Assistant Secretary for the U.S. Department of Agriculture (USDA). He is responsible for directing the policies and supervising the activities and programs of the Forest Service and the Soil Conservation Service. Before joining the USDA, Mr. Moseley served as Agricultural Advisor to William Reilly, Administrator of the U.S. Environmental Protection Agency.

Gaylord Nelson

For 18 years, Gaylord Nelson represented the state of Wisconsin in the U.S. Senate, where he worked actively for environmental causes. Prior to that he served as Governor of Wisconsin and as a state senator. He is currently Counselor of the Wilderness Society.

Richard Stephens

Richard Stephens is the Associate Director for University and Science Education Programs, Office of Energy Research, U.S. Department of Energy. He is responsible for oversight and evaluation of the Department's science education programs and for the development and management of a number of specialized precollege and university science education programs that capitalize on the resources of the Department's national research laboratories. Mr. Stephens also serves as the Department's senior liaison with the university community.

Frank Young

Frank Young serves as the Deputy Assistant Secretary for Health, Science, and Environment at the U.S. Department of Health and Human Services. Prior to his current position he was the Commissioner of the Food and Drug Administration and the U.S. representative to the Executive Committee of the World Health Organization. Dr. Young's area of research is biotechnology, and he has contributed many scientific articles to this field.

Barbara Zartman

Barbara Zartman is the Deputy Director of the Peace Corps of the United States. She is a member of the Federal Task Force on Environmental Education. Ms. Zartman has been instrumental in the staging of a number of cooperative projects among the federal agencies. With her background as a researcher and writer in urban affairs, Ms. Zartman has been a senior researcher for the New York State Assembly, Special Assistant to the Director of the Office of Minority Business Enterprise at the U.S. Department of Commerce, and researcher and writer for the Conference Board, where she directed the work of the Public Affairs Research Council.

BIOGRAPHIES FOR PANEL 1: SUCCESSFUL PARTNERSHIPS TO DEVELOP AND DELIVER ENVIRONMENTAL EDUCATION IN THE UNITED STATES

Moderator:

Walter Bogan

Walter Bogan is Project Director of Science Resources for Schools at the American Association for the Advancement of Science. In this capacity, he is responsible for overseeing the "Science Resources for Schools" project, which addresses the science teaching needs of middle grade teachers. He is also the former director of the Office of Environmental Education of the U.S. Department of Education.

Panelists:

Patricia Borkey

Patricia Borkey is an environmental educator at the Mathematics and Science Center, a consortium of five school districts in Richmond, Virginia. She has designed an aquatic studies program that utilizes a pond site, an aquatic classroom, and a travel van equipped with water-testing equipment, computers, and a microvideo unit. She has also developed programs on African animals, the Alaskan wilderness, tropical rain forests, and the Galapagos Islands.

Randall Champeau

Randall Champeau currently holds three positions in the state of Wisconsin. He is the director of the Wisconsin Center for Environmental Education; a University of Wisconsin Cooperative Extension Specialist in Environmental Education; and an Associate Professor of Environmental Studies in the College of Natural Resources, University of Wisconsin-Stevens Point. He also serves on a number of working committees for both the Alliance for Environmental Education and the North American Association for Environmental Education.

Lillian Kawasaki

Lillian Kawasaki is the general manager of the Los Angeles City Environmental Affairs Department. Her responsibilities include educating the citizens and businesses of Los Angeles on how they can contribute to improving the environmental quality of life. Ms. Kawasaki also serves on the National Advisory Council for Environmental Policy and Technology, which advises EPA on national environmental management policies and programs.

Carol Muscara

Carol Muscara developed and currently directs the Audubon Science Institutes, an educational arm of the National Audubon Society. She is also a teacher specialist, responsible for the implementation of technology into science instruction for Montgomery County Maryland Public Schools. Ms. Muscara has 20 years of experience as a computer specialist and educator.

Herbert Thier

Herbert Thier is the Director of the Chemical Education for Public Understanding Program (CEPUP) at the Lawrence Hall of Science at the University of California at Berkeley. CEPUP is developing educational materials and strategies for school, community, and workplace use that focus on developing an understanding of chemicals and how they interact with people and the environment. As a science educator Dr. Thier has directed several national projects, including the Science Curriculum Improvement Study and the Outdoor Biology Instructional Strategies.

BIOGRAPHIES FOR PANEL 2: SUCCESSFUL PARTNERSHIPS TO DEVELOP AND DELIVER ENVIRONMENTAL EDUCATION GLOBALLY

Moderator:

Lynn Elen Burton

Lynn Elen Burton is the Director of Environmental Education within the Canadian Environmental Citizenship Program of Environment Canada. Before working at Environment Canada she served as Senior Advisor to the Prime Minister's National Advisory Board on Science and Technology and directed a major national study on Human Resources Development. She is on the Board of Directors for the Canadian Association for Adult Education and on the Education Sub-Committee for UNESCO.

Panelists:

Anthony Cortese

Anthony Cortese is Dean of Environmental Programs at Tufts University. In this capacity, he coordinates and develops Tufts University Environmental Programs, as well as additional programs whose aim is environmental literacy and responsibility among all Tufts graduates. Dr. Cortese was the founding director of the Center for Environmental Management at Tufts. Prior to joining the Tufts community, Dr. Cortese served as Commissioner of the Massachusetts Department of Environmental Protection.

William Eblen

William Eblen is President and Co-founder of the Rene Dubos Center for Human Environments. He has broad experience as a teacher, science administrator, specialist in teacher training and curriculum development, and pioneer in environmental education. From 1972 to 1973 he directed a series of national/regional workshops for elders from all fifty states under funding from the first Office of Environmental Education established by the U.S. Department of Education in 1970.

Nan Little

Nan Little has worked as Director of International Programs for Metrocenter YMCA in Seattle, Washington, since 1988. She is a founder and a Director of the YMCA Earth Corps, an international youth leadership development program for high school students. Nan has just come from the National Urban Forestry Conference in Los Angeles, where she spoke on issues of ethnic diversity in the environmental movement.

Augusto Medina

Augusto Medina is a Senior Program Officer for Latin America and the Caribbean at World Wildlife Fund. He is responsible for developing and monitoring over two dozen projects designed to protect Caribbean ecosystems, and for the development of environmental education programs and public awareness campaigns and the production of educational materials for Latin America and the Caribbean. He has assisted numerous government and private conservation groups in the design of their environmental education programs.

BIOGRAPHIES FOR PANEL 3: SUCCESSFUL PARTNERSHIPS TO FINANCE ENVIRONMENTAL EDUCATION

Moderator:

Kathy McGlauflin

Kathy McGlauflin is Vice President for Education for the American Forest Foundation. She is responsible for managing Project Learning Tree, an environmental education program. She also serves on the Board of Directors of the North American Association for Environmental Education and is a member of the National Science Teachers' Association Task Force on Environmental Education.

Panelists:

Thomas Benjamin

Thomas Benjamin is Staff Director of the Alliance for Environmental Education. He has been involved in designing and implementing the International Network for Environmental Education. He has consulted to many international organizations, including the Peace Corps Czechoslovakia Environmental Education Program, the Committee on Earth and Environmental Sciences, and the Convention on International Trade of Endangered Species.

Annette Berkovits

Annette Berkovits is Director of Education at the Bronx Zoo. She is responsible for the zoo's formal and informal interpretive services, including adult education and school programs, curriculum development projects, consultation on development of new exhibit graphics, and international conservation education. Ms. Berkovits also serves as Chair of Education for the New York Zoological Society.

Madeline Strong

Madeline Strong is the Executive Director of the Florida Advisory Council on Environmental Education. The Council is responsible for soliciting, reviewing, recommending, and monitoring the implementation of programs and funds from the state's environmental education trust fund. Ms. Strong has also served as Director of the Office of Public Information for the Northwest Florida Water Management District.

Valerie Williams

Valerie Williams has worked for Southern California Edison for 11 years, initially as developer of their Residential and Commercial Solar Programs. She is currently Supervisor of Program Development and Management in Educational Services. Her team is responsible for the development of programs and materials that can assist educators, K-12, in the areas of science, math, the environment, energy conservation, and electrical safety.

APPENDIX F

MEMBERS OF THE FEDERAL TASK FORCE ON ENVIRONMENTAL EDUCATION

MEMBERS OF THE FEDERAL TASK FORCE ON ENVIRONMENTAL EDUCATION

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Chairperson of EPA Environmental Education Advisory Board

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Chairperson of National Environmental Education Advisory Council

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APPENDIX G

NATIONAL ENVIRONMENTAL EDUCATION ADVISORY COUNCIL MEMBERS AND BIOGRAPHIES

NATIONAL ENVIRONMENTAL EDUCATION ADVISORY COUNCIL
LIST OF MEMBERS

Primary and Secondary Education Representatives

Ms. Fenna Gatty -- Science and Computer Teacher, New Haven Unified School District, Searles Elementary School, Union City, California (one-year appointment)

Dr. Thomasena Woods -- Science Supervisor, Newport News Public Schools, Newport News, Virginia (two-year appointment)

Colleges and Universities Representatives

Dr. Eloy Rodriguez -- Professor of Biological Sciences, University of California, Irvine, Irvine, California (one-year appointment)

Dr. Richard Wilke -- Associate Dean and Professor, College of Natural Resources, University of Wisconsin, Stevens Point, Stevens Point, Wisconsin (three-year appointment)

Not-for-Profit Organization Representatives

Mr. Norbert Hill -- Executive Director, American Indian Science and Engineering Society, Boulder, Colorado (two-year appointment)

Ms. Michelle Perrault -- International Vice President and Director of Summer Workshop for Teachers, Sierra Club, San Francisco, California (three-year appointment)

States

Ms. Peggy Cowan -- Science Specialist and Grants Program Manager, Alaska Department of Education, Juneau, Alaska (two-year appointment)

Mr. John Strickler -- Extension State Leader, Forestry Program, Kansas State University, Manhattan, Kansas (three-year appointment)

Business and Industry Representatives

Ms. Cynthia Harrell-Horn -- Co-Founder and Boardmember, Environmental Media Association, Los Angeles, California (two-year appointment)

Mr. Richard Holmgren -- Chairman of the Board, James M. Montgomery Consulting Engineers, Inc., Bellevue, Washington (three-year appointment)

Senior American Representative

Ms. Joan Rosner -- Albuquerque, New Mexico and South Miami, Florida (one-year appointment)

NATIONAL ENVIRONMENTAL EDUCATION ADVISORY COUNCIL
Member Biographies

Primary and Secondary Education

Ms. Fenna Gatty -- Science and Computer Teacher, New Haven Unified School District, Searles Elementary School, Union City, California.

Ms. Gatty teaches science and computer lab to first through fourth graders. In addition to being a classroom teacher, Ms. Gatty is active in local, state, and national environmental education efforts. Ms. Gatty formed and assisted in coordinating the District K-12 Earth Day Committee which was responsible for her school district's annual Earth Week activities that included the development of curriculum materials and community action. She is also conducting a project with her local community recycling center aimed at increasing the curbside recycling participation rate through a curriculum program for K-4. Ms. Gatty is also active in her school district's tree education and planting efforts and in getting environmental education infused into the K-4 District Science Specialist Curriculum.

Ms. Gatty has been involved in developing model state curricula and national standards for environmental education with the California Department of Education and the American Society for Testing and Materials. She is also a Lead Teacher with the California Science Implementation Network, is an advisor for developing educational materials with the National Association for Humane and Environmental Education, and has conducted teacher training workshops at state and national conferences in environmental education and science. Ms. Gatty holds a B.A. and an M.S. in education and curriculum development.

Ms. Gatty will represent primary and secondary education and will serve a one-year term.

Dr. Thomasena Woods -- Science Supervisor, Newport News Public Schools, Newport News, Virginia.

As science supervisor, Dr. Woods is responsible for providing in-service courses for teachers, monitoring and coordinating science curriculum development, and administering the Science Resource Center program. She is a former science department chair and science teacher with the Newport News Public Schools. Dr. Woods holds a B.A. in Biology/Chemistry, an M.A. in Biology Education, an M.A. in Administration, and a Ph.D. in Education.

Dr. Woods is active in community recycling as a member of the Newport News Recycling and Clean Community Commission which has been recognized by Keep Virginia Beautiful and Keep America Beautiful. She has spearheaded the development of Science/Ecology Clubs at each of her school district's seven middle and four high schools to raise the consciousness of its 14,000 student members about the importance of ecology and science education. Dr. Woods has also coordinated the development of a district-wide recycling awareness campaign that included the development of a 10 page newspaper supplement. The supplement was developed as a joint venture by the local newspaper, local businesses, city government and the school system. For elementary school students, Dr. Woods coordinates the Kiddie Litter program which teaches the importance of recycling and tree planting. Dr. Woods has been instrumental in incorporating environmental education into K-12 science curriculum in the Newport News Public Schools.

Dr. Woods is a member of numerous state and national science education professional organizations. She serves on numerous education advisory committees including those devoted to improving minority involvement in science and engineering.

Dr. Woods will represent primary and secondary education and will serve a two-year term.

Colleges and Universities

Dr. Eloy Rodriguez -- Professor of Cell Biology and Phytochemical Toxicology, University of California, Irvine, with appointments in the School of Biological Sciences and the College of Medicine.

Dr. Rodriguez is an internationally known scientist in the area of zoopharmacognosy, natural products toxicology, and cell biology. For his research in dermatotoxicology and phytochemistry, Dr. Rodriguez has received a five-year Research Career Development Award from the National Institutes of Health. He has been a member of the Bio-Organic Chemistry and Natural Products Study Section for the National Institutes of Health and was a Fulbright Senior Scholar. He holds a B.A. in zoology and a Ph.D. in phytochemistry and plant biology.

Dr. Rodriguez is dedicated to supporting Chicano/Latino students in the sciences. He is presently Director of the National Chicano Council for Higher Education Science Fellowship Program, which has over 100 Chicano/Latino students enrolled in Ph.D. programs across the nation, as well as Director of the Howard Hughes Undergraduate Biological Sciences Minority Research and Training Program, with over 200 University of California, Irvine minority undergraduate participants in basic research in the biological sciences. Dr. Rodriguez is also director of the Kids Investigating and Discovering Sciences Program, a science program for over 125 K-6 minority students.

Dr. Rodriguez has published one book and over 125 research papers. He is presently a Council Delegate in Biological Sciences for the American Association for the Advancement of Science (AAAS). In 1988 and 1990 he was selected as one of the 100 Most Influential Hispanics in the United States.

Dr. Rodriguez will represent colleges and universities and will serve a one-year term.

Dr. Richard Wilke -- Associate Dean and Professor, College of Natural Resources, University of Wisconsin-Stevens Point.

Dr. Wilke presently teaches graduate courses in environmental education and is responsible for building and maintaining the quality of the the university's natural resource program. He holds B.S. and M.S. degrees in resource management and a Ph.D. in environmental education. He is immediate past President of the North American Association for Environmental Education, a member of the North American Commission on Environmental Education Research, and a consulting editor for the Journal of Environmental Education. He has authored over 40 articles and two books on environmental education, including publications for the United Nations Educational, Scientific, and Cultural Organizations.

Dr. Wilke has made over 100 presentations on environmental education at state, national, and international conferences and workshops and has led environmental education foreign study programs in Latin America, Europe, Australia, and Asia. He has served as the committee chair and thesis supervisor for 21 graduate students in environmental education.

Dr. Wilke has directed six National Science Foundation and U.S. Department of Education supported projects for teacher training in environmental education and currently directs two NSF projects aimed at providing environmental education training for Wisconsin teachers. Dr. Wilke has supported statewide initiatives that include preservice teacher training, environmental education grants, and environmental literacy assessments for teachers and students. He currently directs a National Wildlife Federation project to promote state and local environmental education initiatives.

Dr. Wilke will represent colleges and universities and will serve a three-year term.

Not-for-Profit Organizations

Mr. Norbert Hill -- Executive Director, American Indian Science and Engineering Society (AISES), Boulder, Colorado.

AISES is a nonprofit organization dedicated to increasing the number of American Indian scientists and engineers. Under Mr. Hill's leadership, AISES has evolved from an essentially professional society to a major national resource in Indian education which is recognized by the National Science Foundation, the American Association for the Advancement of Science, and more than 70 U.S. corporations. Mr. Hill holds B.S. and M.S. degrees in sociology/anthropology and guidance and counseling and is presently pursuing a doctorate in education. Mr. Hill is a member of the Oneida Indian Tribe and was raised on a tribal reservation near Green Bay, Wisconsin.

Mr. Hill has been active in the development and administration of education programs for American Indians and other educationally disadvantaged students for more than fifteen years. He has served as Director of the Native American Educational Opportunity Program at the University of Colorado where he founded or co-founded the Annual Native American Career Conference, the American Indians in Science Project, the Science and Self-Determination American Indian Upward Bound National Demonstration Project, and the American Indian Science and Engineering Society Science Fairs Project. He was selected as an Educational Policy Fellow by the Institute of Educational Leadership and chose to serve with the Improvement of Post-Secondary Education at the U.S. Department of Education.

Mr. Hill has been a guest speaker, lecturer, and board member for numerous professional and educational organizations and has published several reports and articles that focus on Native American culture as well as minority science and engineering education.

Mr. Hill will represent not-for-profit organizations and will serve a two-year term.

Ms. Michelle Perrault -- Vice President for International Programs and Director of Summer Workshop for Teachers, Sierra Club, San Francisco, California.

Ms. Perrault is a former president of the Sierra Club and chairperson of its National Environmental Education Committee. She presently directs a national summer program for educators and is co-director and founder of the California Environmental Network (CEN). CEN, modeled after the New England Environmental Network at Tufts University, is devoted to enhancing environmental literacy and to broadening citizen's skills in becoming more environmentally active.

Her background includes numerous positions of leadership in education and environmental stewardship with programs and institutions at the local, state, and national level. She has taught at the Children's School at Bank Street College of Education, the Pearl River Schools, and the New York Zoological Society's Education Department.

Ms. Perrault has served in a leadership capacity as president, vice-president, chairperson, and board member for numerous organizations including the American Ocean Foundation, the Contra Costa County Agricultural Advisory Committee, the Environmental Coalition on Offshore Oil, Citizens Advisory Committee for Boston Harbor, League of Women Voters of Boston, the National Coastal Advisory Committee of the U.S. National Oceanic and Atmospheric Administration, the Massachusetts Governor's Task Force on Coastal Resources, and the Massachusetts Trustees for Environmental Education. Ms. Perrault has studied forestry, zoology, and education and holds a B.A. in zoology.

Ms. Perrault will represent not-for-profit organizations and will serve a three-year term.

State Education and Natural Resource Agencies

Ms. Peggy Cowan -- Science Specialist and Grants Program Manager, Alaska Department of Education, Juneau, Alaska.

In her capacity with the Alaska Department of Education, Ms. Cowan is presently responsible for coordinating math and science programs and for administering grants to school districts and universities. Ms. Cowan was director of the Alaska Sea/River Week Program and was a marine education specialist at the University of Alaska, Fairbanks. As director, she administered curriculum development, supervised the training of nearly 1300 teachers, and trained in-service and workshop facilitators in curriculum planning. As marine education specialist, she wrote and edited a science curriculum series as well as the "Alaska Marine Educator's Newsletter," and taught university and college courses.

Ms. Cowan has also served in various capacities as a National Park Service interpreter, as a teaching and research assistant in natural resources and environmental education at the University of Michigan, Ann Arbor, as an environmental education consultant involved in teacher training as well as program and curricula development, and as an environmental education interpreter with various nonprofit organizations such as the Youth Conservation Corps and the Massachusetts Audubon Society.

Ms. Cowan serves on various national environmental education boards including the Western Regional Environmental Education Council, the Project Learning Tree Advisory Committee, and the North American Association for Environmental Education. She also serves on various Alaska boards including the State Parks Advisory Board, the Juneau and Arctic Audubon Societies, the Northern Alaska Environmental Center, and the Northwest Association of Marine Educators. Ms. Cowan has authored numerous environmental education publications and holds a B.S. in education and an M.S. in natural resources.

Ms. Cowan will represent state education agencies and will serve a two-year term.

Mr. John Strickler -- Extension State Leader, Forestry Program, Kansas State University, Manhattan, Kansas.

As state extension leader, Mr. Strickler is responsible for coordinating state forestry water quality efforts as well as departmental environmental education efforts, and is the state coordinator for Project Learning Tree. Mr. Strickler was a past associate state extension forester and an area extension forester with Kansas State University as well as an assistant district ranger with the U.S. Forest Service. Mr. Strickler has also served as the Kansas Governor's special assistant for environment and natural resources and was acting secretary for the Kansas Department of Wildlife and Parks.

Mr. Strickler has been actively involved as a leader in numerous environmental education and resource management organizations including the Kansas Advisory Council for Environmental Education (where he presently serves as its president), the Kansas Board of Trustees of the Nature Conservancy, and the University of Kansas Environmental Education Pilot Program. He is a member of numerous other organizations including the Kansas Academy of Science, the Kansas Association of Conservation Districts, the Kansas Audubon Society, and the Kansas Chapter of the Wildlife Society. Mr. Strickler has authored numerous publications on forestry issues and holds a B.S. in forestry and an M.S. in extension education.

Mr. Strickler will represent state natural resource agencies and will serve a three-year term.

Business and Industry

Ms. Cynthia Harrell Horn -- Co-Founder and Board Member, Environmental Media Association, Los Angeles, California.

As co-founder and board member, Ms. Horn assists in directing the Environmental Media Association's efforts to encourage the incorporation of environmental themes into television, motion pictures, and music. The Environmental Media Association provides educational briefings with leading experts, script research, as well as a resource library and newsletter.

Ms. Horn is also currently serving on several other California based nonprofit organizations including Heal the Bay, Treepeople, and Coalition for Clean Air. Heal the Bay is a nonprofit organization devoted to achieving swimmable, fishable, and surfable waters in the Santa Monica Bay and Southern California coastal waters. Treepeople educates and involves citizens in urban environmental restoration through community tree planting. Treepeople was recently honored at the White House as a recipient of the President's Thousand Points of Light Award. The Coalition for Clean Air is a driving force behind clean air legislation for Southern California and focuses on educating and informing the public through a speaker's bureau and newsletter.

Ms. Horn will represent the entertainment industry and will serve a two-year term.

Mr. Richard Holmgren -- Chairman of the Board, James M. Montgomery Consulting Engineers, Inc., Bellevue, Washington.

Mr. Holmgren's firm specializes in environmental engineering and pollution control technology. He holds a B.S. in civil engineering and an M.S. in sanitary engineering. His work has focused on the design and management of water and wastewater treatment projects and health-related issues. Mr. Holmgren has also been involved in the reclamation and reuse of waste water and the design of life support systems for fresh and salt water aquariums, fish hatcheries and other aquaculture programs. His aquatic projects have included the Baltimore Harbor Aquarium, Sea World of Florida, and the Living Seas Pavilion at the Epcot Center in Florida.

Mr. Holmgren has been active in promoting environmental education through various professional organizations. A scholarship fund was recently created at his firm under the direction of the American Consulting Engineers Council. His firm has also been involved in providing assistance to large metropolitan clients to introduce school age students to environmental engineering by using water and wastewater projects as a primary resource. The programs are designed to motivate students to continue their education beyond high school for training as environmental engineers, scientists, or technicians.

Mr. Holmgren represents business and industry and will serve a three year-term.

Senior Americans

Ms. Joan Rosner -- Albuquerque, New Mexico and South Miami, Florida.

Ms. Rosner retired in 1972 from a career in New York City as a scientist, teacher, science administrator, and pioneer in environmental education. She was a member of the Mayor's Council on the Environment, the Parks Council, local American Lung Association boards, as well as educational liaison for the New York City Board of Education, the National Audubon Society, the Garden Club of America, and the Junior League. She also wrote books, magazine articles, curriculum materials, and syllabi on science and environmental education for elementary and secondary schools.

Ms. Rosner and her husband Hy Rosner co-founded the Alley Pond Environmental Center, an educational/preservationist facility in a New York City park, as well as the Watson Summer Ecology Workshop, an annual resident program which brings educators, parents, and children together for hands-on exploration of their human and natural environments.

Ms. Rosner has also been involved in open space preservation, air quality and transportation planning, teacher training, curriculum development, and developing the Rio Grande Nature Center. She is also co-founder of the New Mexico Association for Environmental Education and chairs the New Mexico Conservation Coordinating Council.

Ms. Rosner has also developed the "Albuquerque Environmental Story" and the "Dade County Environmental Story" which are holistic teacher resource books to promote the understanding of the student's own environment. These stories formed the basis for a nationwide program "Understanding Your Community's Environment" which has been recognized in Renew America's "Environmental Success Index." The Joan and Hy Rosner Environmental Education Fund has been established to support this effort.

Ms. Rosner will represent senior Americans and will serve a one-year term.

APPENDIX H

EPA REGIONAL ENVIRONMENTAL EDUCATION COORDINATORS

EPA ENVIRONMENTAL EDUCATION REGIONAL COORDINATOR
Revised 1/31/92

Region 1
Maria van der Werff
JFK Federal Building
Boston, MA 02203
(617) 565-9447
FAX (617) 565-3415

FTS 8-835-9447
FAX 8-835-3415
CT, ME, MA, NH, RI, VT

Region 2
Terry Ippolito
26 Federal Plaza
New York, NY 10278
(212) 264-2980 (general)
(212) 264-7054 (grants)
FAX (212) 264-2980

FTS 8-264-2980
FAX 8-264-8109
NJ, NY, PR, VI

Region 3
Bonnie Smith
841 Chestnut Street, 3C100
Philadelphia, PA 19107
(215) 597-9076
FAX (215) 597-7906

FTS 8-597-9076
FAX 8-597-7906
DE, DC, MD, PA, VA, WV

Region 4
Rich Nawyn (general information)
Norman Blank (grants)
345 Courtland Street, NE
Atlanta, GA 30365
(404) 347-3004
FAX (404) 347-3721

FTS 8-257-3004
FAX 8-257-3721
AL, FL, GA, KY, MS, NC, SC, TN

Region 5
Suzanne Kircos
77 West Jackson Blvd.
Chicago, IL 60604
(312) 353-3209
FAX (312) 353-1155

FTS 8-353-3209
FAX 8-353-1155
IL, IN, MI, MN, OH, WI

Region 6
Sandy Sevier
1445 Ross Avenue
Dallas, TX 7520
(214) 655-2200
FAX (214) 655-2118

FTS 8-255-2200
FAX 8-255-2118
AR, LA, NM, OK, TX

Region 7
Rowena Michaels
726 Minnesota Ave.
Kansas City, KS 66101
(913) 551-7003
FAX (913) 551-7066

FTS 8-276-7309
FAX 8-276-7066
IA, KS, MO, NE

Region 8
Cece Forget
One Denver Place
999 18th Street
Denver, CO 80202
(303) 294-1113
FAX (303) 294-7665

FTS 8-330-1113
FAX 8-330-7665
CO, MT, ND, SD, UT, WY

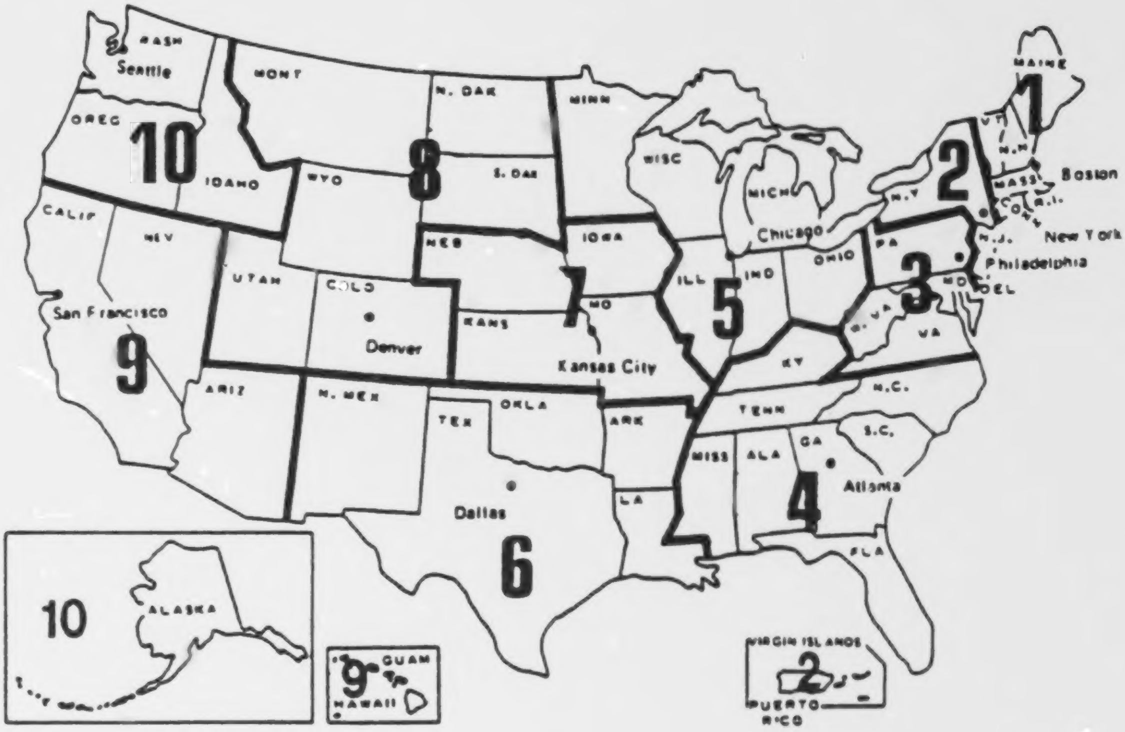
Region 9
Ida Tolliver
75 Hawthorne Street
San Francisco, CA 94105
(415) 744-1581
FAX (415) 744-1605

FTS 8-484-1581
FAX 8-484-1605
AZ, CA, HI, NV, AS, GU

Region 10
Pat Bonner
1200 Sixth Avenue
Seattle, WA 98101
(206) 553-1107
FAX (206) 553-0149

FTS 8-399-1107
FAX 8-399-0149
AK, ID, OR, WA

EPA REGIONAL OFFICES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S. DAK
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New York
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Philadelphia
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Dallas
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GUAM
HAWAII
VIRGIN ISLANDS
2
PUERTO RICO

Regions

4 — Alabama
10 — Alaska
9 — Arizona
6 — Arkansas
9 — California
8 — Colorado
1 — Connecticut
3 — Delaware
3 — D.C.
4 — Florida
4 — Georgia
9 — Hawaii
10 — Idaho
5 — Illinois
5 — Indiana
7 — Iowa
7 — Kansas
4 — Kentucky
6 — Louisiana

Regions

1 — Maine
3 — Maryland
1 — Massachusetts
5 — Michigan
5 — Minnesota
4 — Mississippi
7 — Missouri
8 — Montana
7 — Nebraska
9 — Nevada
1 — New Hampshire
2 — New Jersey
6 — New Mexico
2 — New York
4 — North Carolina
8 — North Dakota
5 — Ohio
6 — Oklahoma
10 — Oregon

Regions

3 — Pennsylvania
1 — Rhode Island
4 — South Carolina
8 — South Dakota
4 — Tennessee
6 — Texas
8 — Utah
1 — Vermont
3 — Virginia
10 — Washington
3 — West Virginia
5 — Wisconsin
8 — Wyoming
9 — American Samoa
9 — Guam
2 — Puerto Rico
2 — Virgin Islands

APPENDIX I

SUMMARY OF U.S. EPA OFFICE OF ENVIRONMENTAL EDUCATION ACTIVITIES

OFFICE OF COMMUNICATIONS, EDUCATION, AND PUBLIC AFFAIRS

Update on EPA's Office of Environmental Education
February 25, 1992

In August 1990, the Office of Environmental Education (OEE) was established within the Office of Communications, Education, and Public Affairs.

The following are highlights of our most recent activities:

FY 1992 Budget

For FY 1992, Congress appropriated $6,500,000 and 5 work-years for OEE activities. The activities of the Office will be funded by 27% of the amount appropriated and the remaining amounts to go to the following: National Environmental Training Program $1,625,000 (25%); Education Grant Program $2,470,000 (38%); and, the National Environmental Education Foundation $650,000 (10%).

Grants Program

OEE is developing two grant programs to support selected environmental education efforts. Congress appropriated approximately $4.1 million for the two programs for FY'92. Grants will be awarded based upon criteria developed by EPA.
The two grant programs are:

> **Training and Education Program:** A grant to a university or non-profit institution or consortia of institutions to operate an environmental training and education program. Eighty preproposals were received in September 1991. An internal EPA panel met to consider the preporoposals in October. The panel selected 10 organizations to submit full proposals. The full proposals were received by EPA in January 1992. The proposals were evaluated on February 21 by a panel of Federal education and grant experts. The panel is making recommendations to the Administrator, who will make the final selection. The EPA expects to announce the award in the spring 1992.
>
> **Education Grants:** Grants to support state, local and non-profit environmental education efforts. Grants will be awarded on an annual basis. During the first year, Congress has appropriated $2.5 million for this program. Applicants may ask for up to $250,000 for a grant with 25% of the appropriated funds to be used for grants of $5,000 or less. Applications for $25,000 or less will be evaluated by the Regional offices, and applications for $25,000 or more will be evaluated by EPA Headquarters. A presolicitation notice was published in the *Federal Register* on September 5, 1991.

A solicitation notice was published on December 10, 1991. The solicitation notice distributed to more than 12,000 people on the grants program mailing list. To date, EPA has received more than 6,500 requests for application kits. Applications are due by March 9 with the first awards to be made during the summer of 1992.
Contact: George Walker (202) 260-4965.

Environmental Education Clearinghouse

OEE is developing a clearinghouse of information on environmental education materials which have been or are being produced by Federal Agencies. Beginning with collection and assessment of materials from EPA, the clearinghouse will eventually expand to include information from all Federal sources and non profit environmental groups.

The clearinghouse is intended to provide customized data to existing information sharing networks with information access routines which are tailored to the user community, especially teachers. Multimedia information will be classified by criteria and determined by any advisory group of environmental educators. Initial availability for the database is scheduled for the fall of 1992.

Contacts: Michael Torrusio (202) 260-2044 or Michael Baker (202) 260-4958.

Environmental Education Advisory

EPA Advisory Board is composed of 35 senior level representatives from Headquarters, Regions, labs, and chaired by Paul Keough, DRA Region I. The Advisory Board has six functioning subcommittees that are at work developing programs, policies, and procedures required under the National Environmental Education Act (NEEA). The Board expects to meet quarterly. It's fourth meeting is scheduled for March 26-27.
Contact: Michael Baker - (202) 260-4958.

Federal Task Force: EPA is required by NEEA to establish a Federal Task Force on Environmental Education to provide advice and recommendations to EPA on its implementation of the new law and to serve as a mechanism for coordinating environmental education activities among Federal agencies. The Task Force is made up of 16 Federal agencies involved in environmental management. The Task Force met in June and September 1991, and expects to meet quarterly. Subcommittees of the Task Force have been set up to develop national goals and identify specific areas of collaboration. The Task Force sponsored a national environ-

mental education conference in November 1991. The next meeting is expected in April 1992.
Contact: Kathleen MacKinnon - (202) 260-4951.

Advisory Council: EPA has selected its 11-member National Environmental Education Advisory Council. The Council represents a wide variety of interest outside of the Federal Government, including educators, States, non-profit groups, and the private sector. The Council will provide advice and recommendations to the Administrator on how EPA implement the new environmental education law. The Council will hold its first meeting February 27 - 28, 1992 and expects to meet twice yearly.
Contact: Kathleen MacKinnon - (202) 260-4951.

Internship and Fellowship Programs

OEE is developing an environmental internship program for college students and an environmental fellowship program for teachers to fulfill the provisions in Section 7 of the NEEA.

The Fellowship Program will allow in-service teachers to work in a Federal facility, including laboratories, for up to 12 months. The work will allow the Fellows an opportunity to learn more about environmental issues and to get "hands-on" experience in helping to solve the nation's environmental problems.

In the start up year of the program, a joint letter from Governor John Ashcroft, NGA Chairman, and EPA Administrator William K. Reilly, was sent to all state Governors and the Mayor of the District of Columbia asking that they nominate one Fellow and an alternate· after consultation with appropriate state and local officials. It is expected that the Fellows will begin their assignments with the Federal government in the fall of 1992.

The Intern Program is in the early stages of implementation. We expect to send out letters and posters to colleges and universities formally announcing the program by late spring and expect to receive applications by summer. The number of interns selected will be limited in the first year due to the limited number of Federal workyears and dollars to support the program.
Contact: Melba Meador (202) 260-4454.

National Network for Environmental Management Studies (NNEMS)

The NNEMS program is designed to obtain high-quality studies on EPA's priority environmental and program management issues. It is designed to supplement the Agency's in-house science, policy and land management analysis while creating a catalyst for increased public awareness and involvement in national and regional environ-

mental policy development and program management. NNEMS provides experience, learning opportunities, professional guidance and encouragement to individuals pursing careers in environmental protection fields.
Contact: Ginger Wandless (202) 260-5960.

EPA Earth Notes

OEE launched in November 1991 a periodical entitled EPA Earth Notes. The periodical contains material from elementary classroom teachers about their first-hand experiences in bringing environmental education into the classroom. The first edition was distributed to 100,000 educators nationwide. The next issue will be published in April.
Contact: Lois Haig (202) 260-4129.

Youth Programs

Boy Scouts of America: A Memorandum of Understanding between EPA and the Boy Scouts was signed in September 1991. A BSA/GSUSA Steering Committee will be formalized in the near future consisting of three subcommittees: Boy Scouts of America Jamboree Subcommittee; Girl Scouts National Service Project; and an Environmental Education Subcommittee.

Trail Boss: EPA, USDA Forest Service, USDA Soil Conservation, BSA, USDI National Park Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service, and the Department of Defense are working together on the development of a new program entitled "TRAIL BOSS". The mission of TRAIL BOSS is to teach volunteer leaders specialized skills for training leading volunteer crews involved in conservation projects resulting in greater stewardship of natural resources. An Interagency Agreement on the Trail Boss program was signed and an official joint signing ceremony was held February 11, 1992.

Students Watching Over Our Planet Earth (SWOOPE): SWOOPE is an innovative science-education program for teachers and students in K-12. The program is being pilot tested in five area schools: Amidon Elementary, Bertie Backus Junior High (EPA adopted school), Wilson Senior High, Coleman Elementary, and a West Virginia elementary school. A SWOOPE Water Quality Workshop was conducted on January 8-10. We expect to offer the SWOOPE program to each EPA Region for the 1992-1993 school year.

Girl Scouts of America and National 4-H Council: Memorandum of Understandings are currently in development with these organizations.
Contact: Doris Gillispie (202) 260-8749.

APPENDIX J

NATIONAL ENVIRONMENTAL EDUCATION ACT

NATIONAL ENVIRONMENTAL EDUCATION ACT

PUBLIC LAW 101-619

On November 16, 1990, the President signed into law the National Environmental Education Act. The Act is designed to increase public understanding of the natural environment and to advance and develop environmental education and training. It requires the U.S. Environmental Protection Agency (EPA) to assume a leadership role among federal agencies in implementing the new law and encourages partnerships among federal government agencies, local educational institutions, state agencies, not-for-profit educational and environmental organizations, and the private sector. The law builds upon long-standing efforts undertaken by EPA and other federal agencies to advance environmental education programs by establishing formal communication and advisory links between the federal government and other parties.

The following provides a brief synopsis of the mandates and authorizations under the Act:

1. Requires the establishment of an Office of Environmental Education (OEE) within EPA. The staff will be headed by a Director who will be a member of the Senior Executive Service, and will include a headquarters staff of not less than 6 and not more than 10 full-time equivalent employees. The regional support will include one full-time equivalent employee per region.

2. Requires the establishment and operation of an Environmental Education and Training Program. On an annual basis, the Administrator will award a grant to institutions of higher education or a not-for-profit institution or consortia of such institutions to establish and operate an environmental education and training program.

3. Authorizes EPA to enter into grants and contracts. Requires publication of regulations addressing solicitation, selection, evaluation, and dissemination of environmental projects and results. Grants are not to exceed $250,000. Twenty-five percent of grant dollars will be awarded as grants of $5,000 or less.

4. Requires EPA to facilitate internships for college students and fellowships for in-service teachers with agencies of the federal government. To the extent practicable, there will be at least 250 internships and 50 fellowships per year.

5. Requires EPA to provide for national awards recognizing outstanding contributions to environmental education.

6. Requires the establishment of a Federal Task Force and a National Advisory Council to advise, consult with, and make recommendations to the Administrator of EPA on matters relating to the implementation of the Act. The Federal Task Force is composed of 16 federal agencies under the leadership of EPA. The National Advisory Council is composed of 11 members who represent primary and secondary education, colleges and

universities, not-for-profit organizations, state agencies, business and industry, and senior Americans.

7. Requires the establishment of a National Environmental Education and Training Foundation that will encourage private gifts for the benefit of the environmental education activities of EPA; participate with foreign governments in furthering environmental education and training worldwide; and further the development of environmental awareness. (Membership and terms of membership are specified.)

8. Authorizes funds to carry out the Act as follows: $12,000,000 for each fiscal year in 1992 and 1993; $13,000,000 for fiscal year 1994; and $14,000,000 for each fiscal year in 1995 and 1996. (Percentages for distributing the funds among programs are specified.) For fiscal year 1992, $6,500,000 was appropriated by Congress to carry out the Act.

One Hundred First Congress of the United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Tuesday, the twenty-third day of January, one thousand nine hundred and ninety

An Act

To promote environmental education, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE AND TABLE OF CONTENTS.

(a) TITLE.—This Act may be cited as the "National Environmental Education Act".

(b) TABLE OF CONTENTS.—

Sec. 1. Short title and table of contents.
Sec. 2. Findings and policy.
Sec. 3. Definitions.
Sec. 4. Office of Environmental Education.
Sec. 5. Environmental education and training program.
Sec. 6. Environmental education grants.
Sec. 7. Environmental internships and fellowships.
Sec. 8. Environmental education awards.
Sec. 9. Environmental Education Advisory Council and Task Force.
Sec. 10. National Environmental Education and Training Foundation.
Sec. 11. Authorization.

SEC. 2. FINDINGS AND POLICY.

(a) FINDINGS.—The Congress finds that—

(1) Threats to human health and environmental quality are increasingly complex, involving a wide range of conventional and toxic contaminants in the air and water and on the land.

(2) There is growing evidence of international environmental problems, such as global warming, ocean pollution, and declines in species diversity, and that these problems pose serious threats to human health and the environment on a global scale.

(3) Environmental problems represent as significant a threat to the quality of life and the economic vitality of urban areas as they do the natural balance of rural areas.

(4) Effective response to complex environmental problems requires understanding of the natural and built environment, awareness of environmental problems and their origins (including those in urban areas), and the skills to solve these problems.

(5) Development of effective solutions to environmental problems and effective implementation of environmental programs requires a well educated and trained, professional work force.

(6) Current Federal efforts to inform and educate the public concerning the natural and built environment and environmental problems are not adequate.

(7) Existing Federal support for development and training of professionals in environmental fields is not sufficient.

(8) The Federal Government, acting through the Environmental Protection Agency, should work with local education institutions, State education agencies, not-for-profit educational and environmental organizations, noncommercial educational

broadcasting entities, and private sector interests to support development of curricula, special projects, and other activities, to increase understanding of the natural and built environment and to improve awareness of environmental problems.

(9) The Federal Government, acting through the coordinated efforts of its agencies and with the leadership of the Environmental Protection Agency, should work with local education institutions, State education agencies, not-for-profit educational and environmental organizations, noncommercial educational broadcasting entities, and private sector interests to develop programs to provide increased emphasis and financial resources for the purpose of attracting students into environmental engineering and assisting them in pursuing the programs to complete the advanced technical education required to provide effective problem solving capabilities for complex environmental issues.

(10) Federal natural resource agencies such as the United States Forest Service have a wide range of environmental expertise and a long history of cooperation with educational institutions and technology transfer that can assist in furthering the purposes of the Act.

(b) POLICY.—It is the policy of the United States to establish and support a program of education on the environment, for students and personnel working with students, through activities in schools, institutions of higher education, and related educational activities, and to encourage postsecondary students to pursue careers related to the environment.

SEC. 3. DEFINITIONS.

For the purposes of this Act, the term—

(1) "Administrator" means the Administrator of the Environmental Protection Agency;

(2) "Agency" means the United States Environmental Protection Agency;

(3) "Federal agency" or "agency of the United States" means any department, agency or other instrumentality of the Federal Government, any independent agency or establishment of the Federal Government including any Government corporation;

(4) "Secretary" means the Secretary of the Department of Education;

(5) "local education agency" means any education agency as defined in section 198 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 3381) and shall include any tribal education agency;

(6) "not-for-profit" organization means an organization, association, or institution described in section 501(c)(3) of the Internal Revenue Code of 1986, which is exempt from taxation pursuant to the provisions of section 501(a) of such Code;

(7) "noncommercial education broadcasting entities" means any noncommercial educational broadcasting station (and/or its legal nonprofit affiliates) as defined and licensed by the Federal Communications Commission;

(8) "tribal education agency" means a school or community college which is controlled by an Indian tribe, band, or nation, including any Alaska Native village, which is recognized as eligible for special programs and services provided by the

United States to Indians because of their status as Indians and which is not administered by the Bureau of Indian Affairs;

(9) "Federal natural resource management agencies" means the United States Forest Service, the Bureau of Land Management, the National Park Service, and the Fish and Wildlife Service;

(10) "environmental engineering" means the discipline within engineering and science concerned with the development and application of scientific and technical solutions to protecting the aquatic and atmospheric environment, including, but not limited to, all phases of water resources planning, water supply, water treatment, air pollution characterization and control, remediation of hazardous substances, environmental transport of contaminants in surface and ground water and atmosphere, and methods for assessment and control of pollution;

(11) "environmental education" and "environmental education and training" mean educational activities and training activities involving elementary, secondary, and postsecondary students, as such terms are defined in the State in which they reside, and environmental education personnel, but does not include technical training activities directed toward environmental management professionals or activities primarily directed toward the support of noneducational research and development;

(12) "Foundation" means the National Environmental Education and Training Foundation established pursuant to section 10 of this Act; and

(13) "Board of Directors" means the Board of Directors of the National Environmental Education and Training Foundation.

SEC. 4. OFFICE OF ENVIRONMENTAL EDUCATION.

(a) The Administrator shall establish an Office of Environmental Education within the Environmental Protection Agency.

(b) The Office of Environmental Education shall—

(1) develop and support programs and related efforts, in consultation and coordination with other Federal agencies, to improve understanding of the natural and built environment, and the relationships between humans and their environment, including the global aspects of environmental problems;

(2) support development and the widest possible dissemination of model curricula, educational materials, and training programs for elementary and secondary students and other interested groups, including senior Americans;

(3) develop and disseminate, in cooperation with other Federal agencies, not-for-profit educational and environmental organizations, State agencies, and noncommercial educational broadcasting entities, environmental education publications and audio/visual and other media materials;

(4) develop and support environmental education seminars, training programs, teleconferences, and workshops for environmental education professionals, as provided for in section 5 of this Act;

(5) manage Federal grant assistance provided to local education agencies, institutions of higher education, other not-for-profit organizations, and noncommercial education broadcasting entities, under section 6 of this Act;

(6) administer the environmental internship and fellowship programs provided for in section 7 of this Act;

(7) administer the environmental awards program provided for in section 8 of this Act;

(8) provide staff support to the Advisory Council and Task Force provided for in section 9 of this Act;

(9) assess, in coordination with other Federal agencies, the demand for professional skills and training needed to respond to current and anticipated environmental problems and cooperate with appropriate institutions, organizations, and agencies to develop training programs, curricula, and continuing education programs for teachers, school administrators, and related professionals;

(10) assure the coordination of Federal statutes and programs administered by the Agency relating to environmental education, consistent with the provisions and purposes of those programs, and work to reduce duplication or inconsistencies within these programs;

(11) work with the Department of Education, the Federal Interagency Committee on Education, and with other Federal agencies, including Federal natural resource management agencies, to assure the effective coordination of programs related to environmental education, including environmental education programs relating to national parks, national forests, and wildlife refuges;

(12) provide information on environmental education and training programs to local education agencies, State education and natural resource agencies, and others; and

(13) otherwise provide for the implementation of this Act.

(c) The Office of Environmental Education shall—

(1) be directed by a Director who shall be a member of the Senior Executive Service;

(2) include a headquarters staff of not less than six and not more than ten full-time equivalent employees; and

(3) be supported by one full-time equivalent employee in each Agency regional office.

SEC. 5. ENVIRONMENTAL EDUCATION AND TRAINING PROGRAM.

(a) There is hereby established an Environmental Education and Training Program. The purpose of the program shall be to train educational professionals in the development and delivery of environmental education and training programs and studies.

(b) The functions and activities of the program shall include, at a minimum—

(1) classroom training in environmental education and studies including environmental sciences and theory, educational methods and practices, environmental career or occupational education, and topical environmental issues and problems;

(2) demonstration of the design and conduct of environmental field studies and assessments;

(3) development of environmental education programs and curriculum, including programs and curriculum to meet the needs of diverse ethnic and cultural groups;

(4) sponsorship and management of international exchanges of teachers and other educational professionals between the United States, Canada, and Mexico involved in environmental programs and issues;

(5) maintenance or support of a library of environmental education materials, information, literature, and technologies, with electronic as well as hard copy accessibility;

(6) evaluation and dissemination of environmental education materials, training methods, and related programs;

(7) sponsorship of conferences, seminars, and related forums for the advancement and development of environmental education and training curricula and materials, including international conferences, seminars, and forums;

(8) supporting effective partnerships and networks and the use of distant learning technologies; and

(9) such other activities as the Administrator determines to be consistent with the policies of this Act.

Special emphasis should be placed on developing environmental education programs, workshops, and training tools that are portable and can be broadly disseminated.

(c)(1) The Administrator shall make a grant on an annual basis to an institution of higher education or other institution which is a not-for-profit institution (or consortia of such institutions) to operate the environmental education and training program required by this section.

(2) Any institution of higher education or other institution (or consortia of such institutions) which is a not-for-profit organization and is interested in receiving a grant under this section may submit to the Administrator an application in such form and containing such information as the Administrator may require.

(3) The Administrator shall award grants under this section on the basis of—

(A) the capability to develop environmental education and training programs;

(B) the capability to deliver training to a range of participants and in a range of settings;

(C) the expertise of the staff in a range of appropriate disciplines;

(D) the relative economic effectiveness of the program in terms of the ratio of overhead costs to direct services;

(E) the capability to make effective use of existing national environmental education resources and programs;

(F) the results of any evaluation under paragraph (5) of this subsection; and

(G) such other factors as the Administrator deems appropriate.

(4) No funds made available to carry out this section shall be used for the acquisition of real property (including buildings) or the construction or substantial modification of any building.

(5) The Administrator shall establish procedures for a careful and detailed review and evaluation of the environmental education and training program to determine whether the quality of the program being operated by the grantee warrants continued support under this section.

(d)(1) Individuals eligible for participation in the program are teachers, faculty, administrators and related support staff associated with local education agencies, colleges, and universities, employees of State education, environmental protection, and natural resource departments, and employees of not-for-profit organizations involved in environmental education activities and issues.

(2) Individuals shall be selected for participation in the program based on applications which shall be in such form as the Administrator determines to be appropriate.

(3) In selecting individuals to participate in the program, the Administrator shall provide for a wide geographic representation and a mix of individuals, including minorities, working at primary, secondary, postsecondary levels, and with appropriate other agencies and departments.

(4) Individuals selected for participation in the program may be provided with a stipend to cover travel and accommodations from grant funds awarded pursuant to this section in such amounts as the Administrator determines to be appropriate.

SEC. 6. ENVIRONMENTAL EDUCATION GRANTS.

(a) The Administrator may enter into a cooperative agreement or contract, or provide financial assistance in the form of a grant, to support projects to design, demonstrate, or disseminate practices, methods, or techniques related to environmental education and training.

(b) Activities eligible for grant support pursuant to this section shall include, but not be limited to, environmental education and training programs for—

(1) design, demonstration, or dissemination of environmental curricula, including development of educational tools and materials;

(2) design and demonstration of field methods, practices, and techniques, including assessment of environmental and ecological conditions and analysis of environmental pollution problems;

(3) projects to understand and assess a specific environmental issue or a specific environmental problem;

(4) provision of training or related education for teachers, faculty, or related personnel in a specific geographic area or region; and

(5) design and demonstration of projects to foster international cooperation in addressing environmental issues and problems involving the United States and Canada or Mexico.

(c) In making grants pursuant to this section, the Administrator shall give priority to those proposed projects which will develop—

(1) a new or significantly improved environmental education practice, method, or technique;

(2) an environmental education practice, method, or technique which may have wide application;

(3) an environmental education practice, method, or technique which addresses a skill or scientific field identified as a priority in the report developed pursuant to section 9(d) of this Act; and

(4) an environmental education practice, method, or technique which addresses an environmental issue which, in the judgment of the Administrator, is of a high priority.

(d) The program established by this section shall include solicitations for projects, selection of suitable projects from among those proposed, supervision of such projects, evaluation of the results of projects, and dissemination of information on the effectiveness and feasibility of the practices, methods, techniques and processes. Within one year of the date of enactment of this Act, the Administrator shall publish regulations to assure satisfactory implementation of each element of the program authorized by this section.

(e) Within 90 days after the date on which amounts are first appropriated for carrying out this Act, and each year thereafter, the Administrator shall publish a solicitation for environmental education grants. The solicitation notice shall prescribe the information to be included in the proposal and other information sufficient to permit the Administrator to assess the project.

(f) Any local education agency, college or university, State education agency or environmental agency, not-for-profit organization, or noncommercial educational broadcasting entity may submit an application to the Administrator in response to the solicitations required by subsection (e) of this section.

(g) Each project under this section shall be performed by the applicant, or by a person satisfactory to the applicant and the Administrator.

(h) Federal funds for any demonstration project under this section shall not exceed 75 percent of the total cost of such project. For the purposes of this section, the non-Federal share of project costs may be provided by inkind contributions and other noncash support. In cases where the Administrator determines that a proposed project merits support and cannot be undertaken without a higher rate of Federal support, the Administrator may approve grants under this section with a matching requirement other than that specified in this subsection, including full Federal funding.

(i) Grants under this section shall not exceed $250,000. In addition, 25 percent of all funds obligated under this section in a fiscal year shall be for grants of not more than $5,000.

SEC. 7. ENVIRONMENTAL INTERNSHIPS AND FELLOWSHIPS.

(a) The Administrator shall, in consultation with the Office of Personnel Management and other appropriate Federal agencies, provide for internships by postsecondary level students and fellowships for in-service teachers with agencies of the Federal Government.

(b) The purpose of internships and fellowships pursuant to this section shall be to provide college level students and in-service teachers with an opportunity to work with professional staff of Federal agencies involved in environmental issues and thereby gain an understanding and appreciation of such issues and the skills and abilities appropriate to such professions.

(c) The Administrator shall, to the extent practicable, support not less than 250 internships each year and not less than 50 fellowships each year.

(d) The internship and fellowship programs shall be managed by the Office of Environmental Education. Interns and fellows may serve in appropriate agencies of the Federal Government including, but not limited to, the Environmental Protection Agency, the Fish and Wildlife Service, the National Oceanic and Atmospheric Administration, the Council on Environmental Quality, Federal natural resource management agencies, the Department of Agriculture, and the National Science Foundation.

(e) Interns shall be hired on a temporary, full-time basis for not to exceed 6 months and shall be compensated appropriately. Fellows shall be hired on a temporary full-time basis for not to exceed 12 months and shall be compensated appropriately. Federal agencies hiring interns shall provide the funds necessary to support salaries and related costs.

(f)(1) Individuals eligible for participation in the internship program are students enrolled at accredited colleges or universities who have successfully completed not less than four courses or the equivalent in environmental sciences or studies, as determined by the Administrator.

(2) Individuals eligible for participation in the fellowship program are in-service teachers who are currently employed by a local education agency and have not less than 2 years experience in teaching environmental education, environmental sciences, or related courses.

(g) Individuals shall be selected for internships and fellowships based on applications which shall be in such form as the Administrator considers appropriate.

(h) In selecting individuals for internships and fellowships, the Administrator shall provide for wide geographic, cultural, and minority representation.

SEC. 8. ENVIRONMENTAL EDUCATION AWARDS.

(a) The Administrator shall provide for a series of national awards recognizing outstanding contributions to environmental education.

(b) In addition to such other awards as the Administrator may provide for, national environmental awards shall include—

(1) The "Theodore Roosevelt Award" to be given in recognition of an outstanding career in environmental education, teaching, or administration;

(2) The "Henry David Thoreau Award" to be given in recognition of an outstanding contribution to literature on the natural environment and environmental pollution problems;

(3) The "Rachael Carson Award" to be given in recognition of an outstanding contribution in print, film, or broadcast media to public education and information on environmental issues or problems; and

(4) The "Gifford Pinchot Award" to be given in recognition of an outstanding contribution to education and training concerning forestry and natural resource management, including multiple use and sustained yield land management.

(c) Recipients of education awards provided for in subsection (b) shall be nominated by the Environmental Education Advisory Council provided for in section 9 of this Act.

(d) The Administrator may provide for the "President's Environmental Youth Awards" to be given to young people in grades kindergarten through twelfth for an outstanding project to promote local environmental awareness.

(e)(1) The Chairman of the Council on Environmental Quality, on behalf of the President, is authorized to develop and administer an awards program to recognize elementary and secondary education teachers and their local educational agencies who demonstrate excellence in advancing environmental education through innovative approaches. One teacher, and the local education agency employing such teacher, from each State, including the District of Columbia and the Commonwealth of Puerto Rico, are eligible to be selected for an award pursuant to this subsection.

(2) The Chairman is authorized to provide a cash award of up to $2,500 to each teacher selected to receive an award pursuant to this

section, which shall be used to further the recipient's professional development in environmental education.

(3) The Chairman is also authorized to provide a cash award of up to $2,500 to the local education agency employing any teacher selected to receive an award pursuant to this section, which shall be used to fund environmental educational activities and programs. Such awards may not be used for construction costs, general expenses, salaries, bonuses, or other administrative expenses.

SEC. 9. ENVIRONMENTAL EDUCATION ADVISORY COUNCIL AND TASK FORCE.

(a) There is hereby established a National Environmental Education Advisory Council and a Federal Task Force on Environmental Education.

(b)(1) The Advisory Council shall advise, consult with, and make recommendations to, the Administrator on matters relating to activities, functions, and policies of the Agency under this Act. With respect to such matters, the Council shall be the exclusive advisory entity for the Administrator. The Council may exchange information with other Advisory Councils established by the Administrator. The Office of Environmental Education shall provide staff support to the Council.

(2) The Advisory Council shall consist of 11 members appointed by the Administrator after consultation with the Secretary. Two members shall be appointed to represent primary and secondary education (one of whom shall be a classroom teacher); two members shall be appointed to represent colleges and universities; two members shall be appointed to represent not-for-profit organizations involved in environmental education; two members shall be appointed to represent State departments of education and natural resources; two representatives shall be appointed to represent business and industry; and one representative shall be appointed to represent senior Americans. A representative of the Secretary shall serve as an ex officio member of the Advisory Council. The conflict of interest provision at section 208(a) of title 18, United States Code, shall not apply to members' participation in particular matters which affect the financial interests of employers which they represent pursuant to this subsection.

(3) The Administrator shall provide that members of the Council represent the various geographic regions of the country, has minority representation, and that the professional backgrounds of the members include scientific, policy, and other appropriate disciplines.

(4) Each member of the Advisory Council shall hold office for a term of 3 years, except that—

(A) any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term; and

(B) the terms of the members first taking office shall expire as follows: four shall expire 3 years after the date of enactment of this Act, four shall expire 2 years after such date, and three shall expire 1 year after such date, as designated by the Administrator at the time of appointment.

(5) Members of the Advisory Council appointed under this section shall, while attending meetings of the Council or otherwise engaged in business of the Council, receive compensation and allowances at a rate to be fixed by the Administrator, but not exceeding the daily equivalent of the annual rate of basic pay in effect for grade GS–18

of the General Schedule for each day (including travel time) during which they are engaged in the actual performance of duties vested in the Council. While away from their homes or regular places of business in the performance of services for the Council, members of the Council shall be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as persons employed intermittently in the Government service are allowed expenses under section 5703(b) of title 5 of the United States Code.

(6) Section 14(a) of the Federal Advisory Committee Act relating to termination, shall not apply to the Advisory Council.

(c)(1) The Federal Task Force on Environmental Education shall advise, consult with and make recommendations to the Administrator on matters relating to implementation of this Act and assure the coordination of such implementation activities with related activities of other Federal agencies.

(2) Membership of the Task Force shall include the—

(A) Department of Education,
(B) Department of the Interior,
(C) Department of Agriculture,
(D) the Environmental Protection Agency,
(E) National Oceanic and Atmospheric Administration,
(F) Council on Environmental Quality,
(G) Tennessee Valley Authority, and
(H) National Science Foundation.

(3) The Environmental Protection Agency shall chair the Task Force.

(4) The Administrator may ask other Federal agencies to participate in the meetings and activities of the Task Force where the Administrator finds it appropriate in carrying out the requirements of this Act.

(d)(1) The Advisory Council shall, after providing for public review and comment, submit to the Congress, within 24 months of enactment of this Act and biennially thereafter, a report which shall—

(A) describe and assess the extent and quality of environmental education in the Nation;

(B) provide a general description of the activities conducted pursuant to this Act and related authorities over the previous 2-year period;

(C) summarize major obstacles to improving environmental education (including environmental education programs relating to national parks and wildlife refuges) and make recommendations for addressing such obstacles;

(D) identify personnel skills, education, and training needed to respond to current and anticipated environmental problems and make recommendations for actions to assure sufficient educational and training opportunities in these professions; and

(E) describe and assess the extent and quality of environmental education programs available to senior Americans and make recommendations thereon; describe the various Federal agency programs to further senior environmental education; and evaluate and make recommendations as to how such educational apparatuses could best be coordinated with nonprofit senior organizations across the Nation, and environmental education institutions and organizations now in existence.

(2) The Federal Task Force on Environmental Education shall review and comment on a draft of the report to Congress.

SEC. 10. THE NATIONAL ENVIRONMENTAL EDUCATION AND TRAINING FOUNDATION.

(a) Establishment and Purposes.—

(1) Establishment.—(A) There is hereby established the National Environmental Education and Training Foundation. The Foundation is established in order to extend the contribution of environmental education and training to meeting critical environmental protection needs, both in this country and internationally; to facilitate the cooperation, coordination, and contribution of public and private resources to create an environmentally advanced educational system; and to foster an open and effective partnership among Federal, State, and local government, business, industry, academic institutions, community based environmental groups, and international organizations.

(B) The Foundation is a charitable and nonprofit corporation whose income is exempt from tax, and donations to which are tax deductible to the same extent as those organizations listed pursuant to section 501(c) of the Internal Revenue Code of 1986. The Foundation is not an agency or establishment of the United States.

(2) Purposes.—The purposes of the Foundation are—

(A) subject to the limitation contained in the final sentence of subsection (d) herein, to encourage, accept, leverage, and administer private gifts for the benefit of, or in connection with, the environmental education and training activities and services of the United States Environmental Protection Agency;

(B) to conduct such other environmental education activities as will further the development of an environmentally conscious and responsible public, a well-trained and environmentally literate workforce, and an environmentally advanced educational system;

(C) to participate with foreign entities and individuals in the conduct and coordination of activities that will further opportunities for environmental education and training to address environmental issues and problems involving the United States and Canada or Mexico.

(3) Programs.—The Foundation will develop, support, and/or operate programs and projects to educate and train educational and environmental professionals, and to assist them in the development and delivery of environmental education and training programs and studies.

(b) Board of Directors.—

(1) Establishment and membership.—(A) The Foundation shall have a governing Board of Directors (hereafter referred to in this section as "the Board"), which shall consist of 13 directors, each of whom shall be knowledgeable or experienced in the environment, education and/or training. The Board shall oversee the activities of the Foundation and shall assure that the activities of the Foundation are consistent with the environmental and education goals and policies of the Environmental Protection Agency and with the intents and purposes of this Act. The membership of the Board, to the extent practicable, shall represent diverse points of view relating to environmental education and training.

(B) The Administrator of the Environmental Protection Agency shall, pursuant to paragraph (2), appoint the Director of the Office of Environmental Education established pursuant to section 3 of this Act as an ex-officio member of the Board. Ex officio membership shall also be offered to other Federal agencies or departments with an interest and/or experience in environmental education and training.

(C) Appointment to the Board shall not constitute employment by, or the holding of an office of, the United States for the purposes of any Federal law.

(2) APPOINTMENT AND TERMS.—(A) Members of the Board shall be appointed by the Administrator of the Environmental Protection Agency.

(B) Within 90 days of the date of the enactment of this Act, and as appropriate thereafter, the Administrator shall publish in the Federal Register an announcement of appointments of Directors of the Board. At the same time, the Administrator shall transmit a copy of such announcement to the Education and Labor Committee and the Committee on Energy and Commerce of the House of Representatives and the Committee on Environment and Public Works of the United States Senate. Such appointments shall become final and effective 90 days after publication in the Federal Register.

(C) The directors shall be appointed for terms of 4 years, except that the Administrator, in making the initial appointments to the Board, shall appoint 5 directors to a term of 2 years, 4 directors to a term of 3 years, and 4 directors to a term of 4 years. The Administrator shall appoint an individual to serve as a director in the event of a vacancy on the Board within 60 days of said vacancy in the manner in which the original appointment was made. No individual may serve more than 2 consecutive terms as a director.

(3) CHAIR.—The Chair shall be elected by the Board from its members for a 2-year term.

(4) QUORUM.—A majority of the current membership of the Board shall constitute a quorum for the transaction of business.

(5) MEETINGS.—The Board shall meet at the call of the Chair at least twice a year. If a Director misses three consecutive regularly scheduled meetings, that individual may be removed from the Board and that vacancy filled in accordance with this subsection.

(6) REIMBURSEMENT OF EXPENSES.—Members of the Board shall serve without pay, but may be reimbursed for the actual and necessary traveling and subsistence expenses incurred by them in the performance of the duties of the Foundation.

(7) GENERAL POWERS.—(A) The Board may complete the organization of the Foundation by—

(i) appointing officers and employees;

(ii) adopting a constitution and bylaws consistent with the purposes of the Foundation and the provisions of this section; and

(iii) undertaking such other acts as may be necessary to carry out the provisions of this section.

(B) The following limitations apply with respect to the appointment of officers and employees of the Foundation:

(i) Officers and employees may not be appointed until the Foundation has sufficient funds to pay for their service.

Officers and employees of the Foundation shall be appointed without regard to the provisions of title 5, of the United States Code, governing appointments in the competitive service, and may be paid without regard to the provisions of chapter 51 or subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, except that no individual so appointed may receive pay in excess of the annual rate of basic pay in effect for grade GS-18 of the General Schedule.

(ii) The first officer or employee appointed by the Board shall be the Executive Director of the Foundation who—

(I) shall serve, at the direction of the Board, as the Secretary of the Board and the Foundation's chief executive officer; and

(II) shall be experienced in matters relating to environmental education and training.

(c) RIGHTS AND OBLIGATIONS OF THE FOUNDATION.—

(1) IN GENERAL.—The Foundation—

(A) shall have perpetual succession;

(B) may conduct business throughout the several States, territories, and possessions of the United States and abroad;

(C) shall have its principal offices in the District of Columbia or in the greater metropolitan area; and

(D) shall at all times maintain a designated agent authorized to accept service of process for the Foundation.

The service of notice to, or service of notice upon, the agent required under paragraph (4), or mailed to the business address of such agent, shall be deemed as service upon or notice to the Foundation.

(2) SEAL.—The Foundation shall have an official seal selected by the Board which shall be judicially noticed.

(3) POWERS.—To carry out its purposes under section 10(a) of this Act, the Foundation shall have, in addition to the powers otherwise given it under this section, the usual powers of a corporation acting as a trustee, including the power—

(A) to accept, receive, solicit, hold, administer, and use any gift, devise, or bequest, either absolutely or in trust, of real or personal property or any income therefrom or other interest therein;

(B) to acquire by purchase or exchange any real or personal property or interest therein;

(C) unless otherwise required by the instrument of transfer, to sell, donate, lease, invest, reinvest, retain, or otherwise dispose of any property or income therefrom;

(D) to sue, or to be sued, and complain or defend itself in any court of competent jurisdiction, except that the Directors of the Board shall not be personally liable, except for gross negligence;

(E) to enter into contracts or other arrangements with public agencies and private organizations and persons and to make such payments as may be necessary to carry out its functions; and

(F) to do any and all acts necessary and proper to carry out the purposes of the Foundation.

(d) CONDITIONS ON DONATIONS.—

(1) For the purposes of this section, a gift, devise, or bequest may be accepted by the Foundation even though it is encum-

bered, restricted, or subject to beneficial interests of private persons if any current future interest therein is for the benefit of the Foundation.

(2) No donation, gift, devise, bequest, property (either real or personal), voluntary services, or any other thing of value may be accepted by the Foundation if it—

(A) is contingent upon the transmission by the Foundation of materials or information prepared by the donor or a third party in such a fashion as to convey a particular point of view favorable to the economic interests of the donor or its constituents or associates; or

(B) in the judgment of the Board carries with it an explicit or implied requirement on the part of the Foundation to do a specific act or make general representations which are to the benefit of the donor and which are not consistent with the environmental and education goals and policies of the Environmental Protection Agency and with the intents and purposes of this Act.

(3) No materials bearing "logos", letterhead or other means of identification associated with a donor or third party may be transmitted by the Foundation, for use in environmental education and training except as required pursuant to subsection (f).

(e) Administrative Services and Support.—Subject to the requirements of this subsection, the Administrator may provide personnel, facilities, and other administrative services to the Foundation, including reimbursement of expenses under subsection (b)(6) of this section, not to exceed then current Federal Government per diem rates, for a period of up to 4 years from the date of enactment of this Act, and may accept reimbursement therefor, to be deposited in the Treasury to the credit of the appropriations then current and chargeable for the costs of providing such services. With respect to personnel, the Administrator may provide no more than 1 full-time employee to serve the Foundation in a policy capacity, and may provide clerical and other support staff at a level equivalent to 2 full-time equivalent employees to the Foundation, for a period not to exceed 2 years from the date of initial assignment of any personnel for this purpose.

(f) Report.—The Foundation shall, as soon as practicable after the end of each fiscal year, transmit to Congress a report of its proceedings and activities during the year, including a full and complete statement of its receipts, expenditures, and investments.

(g) Volunteer Status.—The Administrator may accept, without regard to the civil service classification laws, rules, or regulations, the services of the Foundation, the Board, and the officers and employees of the Board, without compensation from the Environmental Protection Agency, as volunteers in the performance of the functions authorized herein, in the manner provided for under this section.

(h) Audits and Petition of the Attorney General for Equitable Relief.—For purposes of the Act entitled "An Act for audit of accounts of private corporations established under Federal law", approved August 30, 1964 (Public Law 88-504; 36 U.S.C. 1101-1103), the Foundation shall be treated as a private corporation established under Federal law.

(i) United States Release From Liability.—The United States shall not be liable for any debts, defaults, acts, or omissions of the

Foundation nor shall the full faith and credit of the United States extend to any obligation of the Foundation.

(j) AMENDMENT AND REPEAL.—The Congress expressly reserves the right to repeal or amend this section at any time.

SEC. 11. AUTHORIZATION.

(a) There is hereby authorized to be appropriated to the Environmental Protection Agency to carry out this Act not to exceed $12,000,000 for each fiscal year 1992 and 1993, not to exceed $13,000,000 for fiscal year 1994, and not to exceed $14,000,000 for each fiscal year 1995 and 1996.

(b) Of such sums appropriated in a fiscal year, 25 percent shall be available for the activities of the Office of Environmental Education, 25 percent shall be available for the operation of the environmental education and training program, 38 percent shall be available for environmental education grants, 10 percent shall be available for support of the National Environmental Education and Training Foundation, and 2 percent shall be available to support awards pursuant to section 8(e) of this Act.

(c) Funds appropriated pursuant to this section may be made available to the National Environmental Education and Training Foundation to—

(1) match partially or wholly the amount or value of contributions (whether in currency, services, or property) made to the Foundation by private persons and State and local governments; and

(2) provide administrative services under section 10(d) of this Act:

Provided, That the Administrator determines that such funds will be used to carry out the statutory purposes of the Foundation in a manner consistent with the goals, objectives and programs of this Act.

Speaker of the House of Representatives.

Vice President of the United States and
President of the Senate.

APPENDIX K

NATIONAL EDUCATION GOALS

NATONAL EDUCATION GOALS *

GOAL 1

Readiness for School

By the year 2000, all children in America will start school ready to learn.

Objectives:

- ☐ All disadvantaged and disabled children will have access to high quality and developmentally appropriate preschool programs that help prepare children for school.
- ☐ Every parent in America will be a child's first teacher and devote time each day helping his or her preschool child learn; parents will have access to the training and support they need.
- ☐ Children will receive the nutrition and health care needed to arrive at school with healthy minds and bodies, and the number of low birthweight babies will be significantly reduced through enhanced prenatal health systems.

GOAL 2

High School Completion

By the year 2000, the high school graduation rate will increase to at least 90 percent.

Objectives:

- ☐ The nation must dramatically reduce its dropout rate, and 75 percent of those students who do drop out will successfully complete a high school degree or its equivalent.
- ☐ The gap in high school graduation rates between American students from minority backgrounds and their nonminority counterparts will be eliminated.

GOAL 3

Student Achievement and Citizenship

By the year 2000, American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.

Objectives:

- ☐ The academic performance of elementary and secondary students will increase significantly in every quartile, and the distribution of minority students in each level will more closely reflect the student population as a whole.
- ☐ The percentage of students who demonstrate the ability to reason, solve problems, apply knowledge, and write and communicate effectively will increase substantially.
- ☐ All students will be involved in activities that promote and

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* U.S. Department of Education (July 1990)

demonstrate good citizenship, community service, and personal responsibility.

- ☐ The percentage of students who are competent in more than one language will substantially increase.
- ☐ All students will be knowledgeable about the diverse cultural heritage of this nation and about the world community.

GOAL 4

Science and Mathematics

By the year 2000, U.S. students will be first in the world in science and mathematics achievement.

Objectives:

- ☐ Math and science education will be strengthened throughout the system, especially in the early grades.
- ☐ The number of teachers with a substantive background in mathematics and science will increase by 50 percent.
- ☐ The number of United States undergraduate and graduate students, especially women and minorities, who complete degrees in mathematics, science, and engineering will increase significantly.

GOAL 5

Adult Literacy and Lifelong Learning

By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

Objectives:

- ☐ Every major American business will be involved in strengthening the connection between education and work.
- ☐ All workers will have the opportunity to acquire the knowledge and skills, from basic to highly technical, needed to adapt to emerging new technologies, work methods, and markets through public and private educational, vocational, technical, workplace, or other programs.
- ☐ The number of quality programs, including those at libraries, that are designed to serve more effectively the needs of the growing number of part-time and mid-career students will increase substantially.
- ☐ The proportion of those qualified students, especially minorities, who enter college; who complete at least two years; and who complete their degree programs will increase substantially.
- ☐ The proportion of college graduates who demonstrate an advanced ability to think critically, communicate effectively, and solve problems will increase substantially.

GOAL 6

Safe, Disciplined, and Drug-Free Schools

By the year 2000, every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.

Objectives:

- ☐ Every school will implement a firm and fair policy on use, possession, and distribution of drugs and alcohol.
- ☐ Parents, businesses, and community organizations will work together to ensure that the schools are a safe haven for all children.
- ☐ Every school district will develop a comprehensive K-12 drug and alcohol prevention education program. Drug and alcohol curriculum should be taught as an integral part of health education. In addition, community-based teams should be organized to provide students and teachers with needed support.

☆ U.S. GOVERNMENT PRINTING OFFICE:1992-622-136/60053

EPA
United States
Environmental Protection Agency
(A-107)
Washington, DC 20460

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